NOTE

This Microfiche meets the quality requirements of the American National Standard for Microfiche of Documents (ANSI PH5.9-1975). However, because of imperfections in the document from which it was made, it contains images that are illegible or difficult to read. The source document for this microfiche is the best copy that could be obtained prior to filming.

Congressional Information Service, Inc.
Washington, D.C.

Calendar No. 305

100TH CONGRESS
1st Session

SENATE

REPORT
100-152

NUCLEAR WASTE POLICY ACT AMENDMENTS ACT OF 1987

SEPTEMBER 1, 1987.—Ordered to be printed

Filed under authority of the order of the Senate of August 7 (legislative day, August 5), 1987

Mr. JOHNSTON, from the Committee on Energy and Natural Resources, submitted the following

REPORT

together with

ADDITIONAL VIEWS

[To accompany S. 1668]

The Committee on Energy and Natural Resources, having considered the same, reports favorably an original bill, to redirect the program for the disposal of spent nuclear fuel and high-level radioactive waste under the Nuclear Waste Policy Act of 1982 to achieve budget savings, and for other purposes, and recommends that the bill do pass.

PURPOSE OF THE MEASURE

The purpose of the bill is to redirect the program for the management and disposal of spent nuclear fuel and high-level radioactive waste under the Nuclear Waste Policy Act of 1982 (NWPA) to provide for—

Sequential characterization of candidate sites for a geologic respository for disposal of nuclear waste;

Construction of a monitored retrievable storage facility for spent nuclear fuel as part of an integrated nuclear waste management system; and

Benefits payments with respect to a repository or a monitored retrievable storage facility to States, Indian tribes and units of local government as appropriate.

76-701

S313-23

SUMMARY OF MAJOR PROVISIONS

Section 2 of the bill adds a new title IV, entitled "Program Redirection", to the NWPA. The major provisions of this new title are:

SECTION 402. FIRST REPOSITORY SITE CHARACTERIZATION

This section directs the Secretary of Energy to select by January 1, 1989 a single preferred site from the three candidate sites previously selected for characterization for the first repository.

After this selection the Secretary would suspend work at sites not selected and characterize the preferred site in accordance with the requirements of current law. If the preferred site proves to be unsuitable, the Secretary would then select a new preferred site from the remaining candidate sites.

Under current law, the Secretary is required to characterize all three candidate sites simulaneously.

The State containing a preferred site would be eligible for benefits payments under section 404 of the new title.

SECTION 403. SITING OF MONITORED RETREIVABLE STORAGE FACILITIES

This section directs the Secretary to construct a monitored retrievable storage (MRS) facility as an integral part of the nuclear waste management system.

The Department of Energy's proposal to site an MRS facility at Oak Ridge, Tennessee, transmitted to Congress in March 1987, is annulled and revoked. The Secretary is required, between the date of the enactment of the bill and January 1, 1989, to conduct a survey of potential sites for an MRS and to encourage States and Indian tribes to request siting of an MRS within their borders or on their reservation. Unless the Secretary selects a site for an MRS based on a request, the Secretary is directed to select an MRS site between January 1, 1989 and October 1, 1989 and proceed with construction in accordance with existing requirements of the NWPA.

The State containing an MRS, or in the case that an MRS is located on a reservation, the Indian tribe, would be eligible for benefits payments under section 404 of the new title.

SECTION 404. BENEFITS AGREEMENTS

This section authorizes the Secretary to enter into agreements to provide benefits payments to a State that contains a geologic repository. The Secretary may also enter into agreements to provide payments to a State that contains, or to an Indian tribe whose reservation contains, a monitored retrievable storage facility. Either type of agreement with a State must be negotiated in consultation with affected units of local government.

SECTION 405. CONTENT OF AGREEMENTS

This section describes the content of benefits agreements, including the amount of annual payments that would be made to a State or Indian tribe under a benefits agreement for a repository or MRS.

The benefits schedule provides $50 million per year to the host State for a repository from the time of execution of a benefits

agreement until spent fuel or high-level waste is received at the facility. Upon receipt of waste at a repository, payments would increase to $100 million per year and continue for the life of the facility. For an MRS, benefits payments would be $20 million per year to the host State or tribe from the time of execution of a benefits agreement until waste is received at the facility. Upon receipt of waste at the MRS, payments would be increased to $50 million per year and continue for the life of the facility. Section 405 of the new title provides that affected units of local government would be entitled to not less than one-third of these benefits payments.

To receive benefits, a State or tribe must agree to participate in the design and licensing of the repository or MRS, as the case may be, and must waive rights to disapprove the facility under the "State veto" provisions of current law.

SECTION 406. REVIEW PANEL

This section describes the Review Panel representing Federal, State and local government and persons paying into the Nuclear Waste Fund that would be required under any benefits agreement. The Review Panel would oversee the design, construction, operation, and decommissioning of MRS or repository facilities in accordance with the terms of a benefits agreement under section 404.

SECTION 407. SITING A SECOND REPOSITORY

Section 407 prohibits further site-specific work on a second repository and removes the requirement of current law to select candidate sites. Instead, the Secretary would be required to submit a report to the President and Congress between January 1, 2007 and January 1, 2010 on the need for a second repository.

SECTION 408. TERMINATION

This section describes the conditions under which a benefits agreement may be terminated.

The Secretary may terminate a benefits agreement if the site covered by the agreement is disqualified or the Secretary determines that the Nuclear Regulatory Commission (NRC) cannot license the facility covered by the agreement within a reasonable time. The State or Indian tribe may terminate a benefits agreement only if the Secretary disqualifies the site or determines that the NRC cannot license the facility within a reasonable time.

SECTION 409. MISCELLANEOUS PROVISIONS

This section describes the relationship of the new title to the rest of the NWPA and clarifies the application of the National Environmental Policy Act of 1969 to activities under the new title.

SECTION 410. AUTHORIZATION OF APPROPRIATIONS

This section authorizes appropriations from the Nuclear Waste Fund not to exceed $567 million in fiscal year 1988, $545 million in fiscal year 1989, and $484 million in fiscal year 1990.

Section 3 amends title I of the NWPA to add a new section 10 requiring a study on reprocessing by the National Academy of Sci-

ences and a report on subseabed disposal of spent nuclear fuel and high-level radioactive waste.

Section 4 amends title I of the NWPA to add a new section 126 to—

Require that spent nuclear fuel or high-level radioactive waste be transported under the program mandated by the NWPA in packages that have been certified by the Nuclear Regulatory Commission (NRC);

Require the Secretary to abide by regulations of the NRC regarding advance notification of State and local governments prior to transportation of such fuel or waste under the program;

Provide technical assistance and funds to States for training public officials with respect to transportation of fuel and waste;

Direct the NRC to require actual tests of full scale transportation packages; and

Require the NRC to survey transportation packages used in other nations and report to Congress by January 1, 1989.

Section 5 amends the repository site approval process under title I of the NWPA to—

Require the Secretary, after consultation with the Secretary of Defense, to determine that construction and operation of a repository would not seriously jeopardize national security by reason of interference with national defense activities nearby; and

Provide certain adjacent States with the same rights and opportunities to participate in the repository siting process as a State containing a candidate site under current law.

Section 6 adds a new section 127 to the NWPA that requires the Secretary, in siting federal research projects, to give special consideration to proposals from States where a repository is located.

Background and Need

The Nuclear Waste Policy Act of 1982 (NWPA) establishes a national policy and program for safely storing, transporting, and disposing of spent nuclear fuel and high-level radioactive waste. The NWPA makes the Federal Government responsible for the disposal of this fuel and waste and sets forth a schedule for the Department of Energy to carry out a program for the siting, construction, and operation of geologic repositories. The Secretary of Energy is also required under the NWPA to study the need for and feasibility of monitored retrievable storage (MRS) and submit a proposal to Congress for construction of one or more MRS facilities.

The NWPA provides a role for State and public participation in the planning and development of repositories and a role for other federal agencies in the licensing of waste facilities. The NWPA establishes a Nuclear Waste Fund, to be composed of payments made by generators of spent fuel and high-level waste, from which the costs of the program are paid. In return for these payments, the Secretary is required to dispose of spent fuel and high-level waste covered by contracts under the NWPA beginning not later than January 31, 1998.

The NWPA requires the recommendation to the President of three candidate sites for characterization as a first geologic repository by January 1, 1985, followed by completion of a detailed site characterization program and recommendation to Congress of a single site for development as a repository by March 31, 1987. A similar process and schedule for a second geologic repository is authorized, with recommendation of three candidate sites required by July 1, 1989 and recommendation of a single site required by March 31, 1990. The NWPA envisions that the Department will submit an application for a construction authorization to the Nuclear Regulatory Commission within 90 days of recommendation of a single site for both a first and second repository. Based on this schedule, the NRC is required under current law to either approve or disapprove the Department's application for a first repository by January 1, 1989 and for a second repository by January 1, 1992.

The schedules included in the NWPA have proven to be overly ambitious, and the Department has missed most of the interim statutory milestones. This has been largely due to the need to provide additional time for completion of necessary technical work and additional time for public participation. Delays in the program have also occurred—and are likely to continue to occur—for a variety of reasons, including the litigation of numerous pending cases challenging the Department's implementation of the NWPA.

In the four and a half years since passage of the NWPA, it has become clear that the program laid out in the Act will take longer to complete than was anticipated and that completion will be at much greater cost. For example, at the time of passage of the NWPA, it was anticipated that site characterization of candidate sites would take about two years and would cost between $40 and $60 million per site. Site characterization is now expected to take six to seven years and cost over $1 billion per site. The total cost of the nuclear waste program is now estimated to be as much as $41 billion.

In addition to cost and schedule considerations, a number of other circumstances have changed since passage of the NWPA. Since that time, it has become clear that rates of spent fuel generation are much lower than anticipated. It has also become clear that as we approach major decision points in the nuclear waste program, there will be great potential for political opposition unless substantial efforts are made to mitigate any perceived adverse impact.

The program has been under determined attack from some in the States and in Congress since 1986, when several major decisions were announced by the Department concerning candidate sites for a first repository, second repository, and MRS facility. These major decisions announced in 1986 included:

In January 1986, the Department identified 12 sites in 7 eastern and midwestern States as potential sites for a second repository. These States included Maine, New Hampshire, Virginia, North Carolina, Georgia, Minnesota, and Wisconsin.

In February 1986, the Department made plans to submit to Congress its proposal to construct a monitored retrievable storage facility in Tennessee. The Department was prohibited by a district court injunction from submitting the proposal until March 1987.

In May 1986, the Department selected candidate sites in Washington, Nevada, and Texas for detailed site characterization for a first repository.

In May 1986, the Department announced that it would defer indefinitely its site-specific work related to selection of sites for a second repository.

Definitive decisions—selecting certain first repository sites for characterization, while rejecting others; identifying potential second repository sites; and proposing a preferred site for an MRS facility—have served to focus intense concern and criticism on the program. Most of this criticism, perhaps understandably, comes from States identified as having potential sites.

Decisions such as these, however, must be made in any nuclear waste program. Identifying potential sites for a repository or MRS, and ultimately selecting sites, will have to occur if a permanent solution to nuclear waste disposal is to be found.

In June 1987, the Department submitted to Congress a document containing recommendations for schedule and programmatic changes to the waste program, based upon the experience in operating the program since passage of the NWPA. Included in this document (ref. DOE/RW-0128: OCRWM Mission Plan Amendment, June 1987) were recommendations for deferral of the date contemplated for operation of a first repository from January 31, 1998 to 2003, and for deferral of any site screening for a second repository until 1995. The Department also recommended that Congress authorize construction of an MRS both to improve operational efficiency of the waste management system and to better ensure waste acceptance by 1998.

The Department's recommendations are premised on several factors. In the case of the first repository schedule, the Department believes that the five-year extension is needed to allow additional time to conduct detailed site characterization and testing, to allow sufficient time to prepare licensing documents to submit to the Nuclear Regulatory Commission, and to allow additional time for public participation.

With respect to the second repository, the Department believes that it is prudent to defer site screening until the mid-1990s in order to focus current efforts on detailed testing of the first repository sites and on construction of an MRS. Because the rate of spent fuel generation is significantly lower than was anticipated at the time of passage of the NWPA, the Department feels that deferral of the second repository program will not have an adverse impact on the Federal Government's ability to dispose of spent fuel and high-level waste. The NWPA set a limit of 70,000 metric tons on the amount of waste that could be disposed of in a first repository, but this limit is not expected to be reached until after the year 2025.

The Department's recommendation that Congress authorize construction of an MRS as an integral element of the overall waste management system is based on the conclusion in its March 1987 proposal that there are substantial operational and cost benefits from having the MRS receive and package spent fuel prior to shipment to a permanent geologic repository. The MRS proposed by the Department would be an above-ground facility that would include a

receiving and handling building, a plant for manufacturing of concrete storage casks, an interim storage area, and support facilities. Such a facility could serve both as a packaging and handling facility during repository operation and as an interim, or backup, storage facility prior to operation of a repository.

The Department's recommendations represent departures from current law and require Congressional approval in order for the Department to proceed effectively. However, Congress has yet to take any action on the Department's June 1987 recommendations. Congressional reaction to these recommendations generally reflects the lack of political consensus on the direction the program should take. However, if the nuclear waste program is to proceed, it is up to Congress to develop the political consensus necessary to take decisive action to refocus and streamline the program.

The Department's nuclear waste program is now at a crossroads. From a technical standpoint, the program is ready to go forward. Yet political opposition is intensifying and there are continuing efforts in Congress to prevent that technical work from going forward.

In fiscal year 1987, the Department's appropriations legislation was accompanied by language forbidding the use of funds to drill exploratory shafts. Site characterization cannot be completed without the sinking of exploratory shafts. In the 100th Congress, H.R. 2700, the fiscal year 1988 Energy and Water Development Appropriations bill passed by the House, incorporates a similar prohibition in its legislative history.

More significantly, critics of the program are mounting a major effort in the 100th Congress to shut down the program entirely and to delay indefinitely any further decisions on siting a repository or MRS. Legislation has been introduced in both the Senate (Amendment No. 428) and the House (H.R. 2888) that would place an indefinite moratorium on the program and would establish a commission to study nuclear waste management. The practical effect of these legislative proposals would be repeal of the Nuclear Waste Policy Act of 1982. This would simply serve to postpone any decisions on nuclear waste disposal for many years.

Further study of the issue of nuclear waste disposal may have political appeal, but it will not move this country any closer to safe, permanent isolation of the waste. If the current program is shut down indefinitely, it will be, in all likelihood, many years before a new program is developed.

Meanwhile, spent fuel and high-level waste will continue to accumulate where it is generated. Commercial spent fuel is currently being generated at 68 nuclear reactor sites in 31 States. This spent fuel will continue to accumulate at a rate of 3,000 metric tons a year until a temporary storage or permanent disposal facility is constructed and operating. Defense high-level waste is currently generated and stored in three States, and commercial high-level waste resulting from reprocessing of spent fuel is being stored at one additional site.

While storage is carried out safely at these sites, none was ever contemplated or designed to be a permanent home for nuclear waste. Managing nuclear waste in an ad hoc fashion for the indefi-

nite future at these sites is not a responsible solution to the problem of nuclear waste disposal.

It has become evident that the nuclear waste program needs to be refocused and streamlined in order to move it off dead-center and out of this political crossfire. It has also become evident that additional efforts are needed to mitigate any perceived adverse impacts from the siting of a repository or MRS.

The Committee believes that Congress is committed to continuing the ongoing program to develop a nuclear waste management system. Congressional direction is needed, however, to resolve the political issues and the controversy between the affected States and the Federal Government. The Committee believes that Congress must make "mid-course corrections" to allow the nuclear waste program to move forward.

Between January and July 1987, the Committee held 10 hearings related to the Department's nuclear waste program in an effort to get at the root of the problems facing the program. Testimony from those hearings—which included witnesses representing the Administration, the Nuclear Regulatory Commission, the National Academy of Sciences, State and local governments, the nuclear utilities, and the environmental community—revealed that the problems that confront the nuclear waste program are political rather than technical.

Technical experts from the Nuclear Regulatory Commission and the National Academy of Sciences confirmed that the Department has done adequate technical preparation to proceed with site characterization at the three candidate sites. While there are legitimate technical issues that have been raised by the States and other interested parties, it is clear from the record of these hearings that the Department is committed to resolving these issues. This can only occur through continuation of the ongoing work and through detailed site characterization.

The Department has put a tremendous amount of effort and resources into collecting the necessary data to select these candidate sites and into planning for detailed testing during site characterization. As soon as site characterization plans are completed and reviewed by NRC and the public, the Department will be ready to proceed with detailed testing at each of the three candidates sites, which will include the sinking of exploratory shafts. A major part of the testing program at these sites will be construction of an exploratory shaft facility at the proposed depth of a repository to obtain the necessary data and information on the suitability of the sites.

The Committee believes that redirection of the program in accordance with this legislation is essential. It has become clear that refinement of national policy is needed if the goals of the Nuclear Waste Policy Act are to be achieved smoothly and cost-effectively and if the Department is to meet its contractual commitment to take spent fuel from utilities beginning in 1998.

The Nuclear Waste Policy Act of 1982 was passed after 25 years of effort with the intent of developing a program for safe, permanent disposal of nuclear waste in a timely fashion. The statutory goals of the 1982 Act are as valid today as they were when the Act was passed. Congress must take action to reaffirm those goals and

put the program back on solid footing to ensure that those goals are met.

The Committee believes that this legislation provides the needed redirection and addresses these goals in several ways:

Selecting a single site for characterization for a first repository instead of characterizing three sites simultaneously will make it possible for the technical expertise and resources of the Department and its contractors to be concentrated on that one site.

Characterization of one site instead of three will provide cost savings of up to $2 billion.

This cost savings will allow the Department to provide benefits payments to a host State or Indian tribe to mitigate any perceived adverse impacts from the siting of a repository or MRS within its borders or on its reservation.

The offer of generous benefits payments to a host State or Indian tribe has the potential to encourage a State or tribe to request siting of an MRS facility.

Authorization of an MRS facility will allow the Department to proceed with construction of a facility as soon after January 1, 1989 as a suitable site is identified. Authorization of the facility will better ensure that the Department is able to meet its contractual commitment to accept spent fuel from utilities beginning in 1998.

Development of an MRS as an integral element of the waste management system will provide a facility that can serve both as a packaging and handling facility during repository operation and as an interim, or backup, storage facility prior to operation of a repository.

Suspension of any screening of potential sites for a second repository until the need for such a facility is fully evaluated will allow the Department to focus its efforts on developing the first repository.

It is imperative that Congress take decisive action in this session to reaffirm the statutory goals of the 1982 Act, to refocus and streamline the process for selection of suitable repository or MRS sites, and to ease the political difficulties associated with the program. Only the Congress is in the position to provide the necessary redirection to the Department and to the States to allow the program to move forward. The Committee believes that this legislation will accomplish these goals in a reasonable and effective manner.

Legislative History

During the first session of the 100th Congress, the Committee devoted 11 days to hearings and briefings on nuclear waste issues.

The Committee held a briefing on the Swedish nuclear waste management program on January 22, 1987.

The full Committee held oversight hearings on the Department of Energy's nuclear waste program on January 29, February 4, February 5, April 28, and June 29, 1987, and a hearing on the Department of Energy's proposal to construct a monitored retrievable storage facility in Oak Ridge, Tennessee (EC-1022) on April 29, 1987.

The full Committee also held hearings on specific legislation relating to nuclear waste disposal as follows:

On April 29 and May 7, 1987, on S. 839 (Mr. Johnston, Mr. McClure, Mr. Warner, Mr. Symms, and Mr. Wallop); and

On July 16 and July 17, 1987 on S. 1007 (Mr. Hatfield, Mr. Hecht, and Mr. Packwood), S. 1141 (Mr. Hecht and Mr. Evans); S. 1211 (Mr. Hecht), S. 1266 (Mr. Evans, Mr. Murkowski, and Mr. Hecht) and S. 1428 (Mr. Hecht, Mr. Reid, and Mr. Evans).

Other legislation dealing with nuclear waste referred to the Committee includes:

S. 621 (Mr. Mitchell, Mr. Proxmire, Mr. Humphrey, Mr. Rudman, Mr. Durenberger, Mr. Warner, and Mr. Trible);

S. 642 (Mr. Trible, Mr. Kasten, Mr. Warner, Mr. Proxmire, and Mr. Helms);

S. 935 (Mr. Warner and Mr. Trible);

S. 1423 (Mr. Johnston, by request); and

S. 1481 (Mr. Johnston, Mr. McClure, and Mr. Wallop).

The Committee met in open business session to consider the legislation on July 22, July 23, July 24, July 28, and July 29, 1987.

Committee Recommendation and Tabulation of Votes

The Senate Committee on Energy and Natural Resources, in open business session on July 29, 1987, by majority vote of a quorum present recommends that the Senate pass the bill.

The rollcall vote on reporting the measure was 17 yeas and 2 nays as follows:

YEAS	NAYS
Mr. Johnston	Mr. Domenici*
Mr. Bumpers	Mr. Hecht
Mr. Ford	
Mr. Metzenbaum	
Mr. Melcher*	
Mr. Bradley	
Mr. Bingaman*	
Mr. Wirth	
Mr. Fowler	
Mr. Conrad	
Mr. McClure	
Mr. Hatfield	
Mr. Weicker*	
Mr. Wallop*	
Mr. Murkowski	
Mr. Nickles	
Mr. Evans	

* Indicates vote by proxy.

Section-by-Section Analysis

SECTION 1

This section provides that the bill may be cited as the "Nuclear Waste Policy Act Amendments Act of 1987".

SECTION 2

This section amends the Nuclear Waste Policy Act of 1982 by adding a new title IV entitled "Program Redirection". The new title has ten sections as follows:

Section 401

This section contains the findings, purpose and definitions for the title.

The findings include a statement that significant savings from reduced costs to the nuclear waste management system can be achieved in the near term by redirection of the national nuclear waste program to construct a monitored retrievable storage (MRS) facility and to characterize candidate repository sites sequentially, rather than in parallel as is provided for in the Nuclear Waste Policy Act of 1982.

The cost of characterizing candidate repository sites has been estimated at approximately $1 billion per site. Therefore, successful characterization of one candidate site, rather than full characterization of three, will significantly reduce program costs. Based on the record, there is ample reason to believe that at least one of the three candidate sites now under consideration can be successfully characterized.

The construction of an MRS facility, as proposed by the Secretary of Energy, is necessary in the scheme proposed here. Construction of an MRS facility provides a number of advantages. MRS results in cost advantages, improves system flexibility, and provides insurance in the form of backup storage in the event that sequential repository site characterization does not result in an operating repository by 1998, which is the time the Secretary is obligated to accept spent nuclear fuel under existing contracts with nuclear utilities.

Thus, sequential characterization of candidate repository sites, construction of an MRS facility, and significant budget savings go hand in hand.

A second finding is that the redirection of the program as set forth in this legislation is required to permit the Secretary to carry out in a timely fashion his responsibilities under the NWPA to accept spent nuclear fuel and dispose of it. This legislation provides definitive Congressional direction to proceed with the siting of the facilities the program needs and new authority to assist the Secretary in resolving conflicts involving States, Indian tribes and units of local government in siting those facilities.

Accordingly, a final finding is that it is appropriate for the Federal Government to provide payments to an Indian tribe when a repository or a monitored retrievable storage (MRS) facility is sited on the reservation of the tribe, and, when the facility is not sited on a reservation, it is appropriate to provide payments to the State and to affected units of local government where the repository or MRS facility is sited.

The authority to make these payments provides an opportunity, not available under current law, for significant benefits for a State, tribe or unit of local government from the siting of a repository or an MRS facility. Authority to make these payments provides the

potential that a State, tribe or unit of local government might determine that it is advantageous to cooperate in the siting of the needed facilities.

The term "affected unit of local government" is defined for purposes of the new title IV to include, at the discretion of the Secretary, units of local government contiguous to the unit of local government where a repository or MRS facility is sited. The Secretary has the flexibility to designate a contiguous unit of local government as "affected" when the Secretary feels that to do so will promote equity and further the process of facility siting and development.

Section 402

This section directs the Secretary, by January 1, 1989, to select a preferred site for characterization for the first repository.

The Secretary would make the selection from the three sites previously selected for characterization as candidate sites for the first repository: on the Hanford Reservation in Richland, Washington; in Deaf Smith County, Texas; and at Yucca Mountain in Nevada.

The President has already determined that each of these three sites is suitable for characterization as a candidate site for the first repository. No new information or analysis is necessary in order to proceed with full characterization of all three sites. Under section 402, the Secretary is directed to select the most suitable of these three sites for characterization.

In making the selection of one of these sites as a preferred site, the bill directs the Secretary to give primary consideration to the four factors set forth in subparagraphs (1)(A) through (D). These factors are to be considered for the purpose of selecting one site from the three for characterization. The factors supplement the guidelines under section 112 of the Act and supersede the guidelines where inconsistent with them. The guidelines under section 112 are for the purpose of selecting sites for characterization generally. The factors included in this section are intended to be used to select the single site most suitable for characterization.

The Committee is aware that significant ground water or surface water resources, or both, may be present at each of the three sites from which the Secretary must select a preferred site for characterization. The Committee also is aware that several States and Indian tribes have expressed strong concerns about the adequacy of the Secretary's assessment of potential impacts from storage and disposal of nuclear waste on these water resources. The Committee anticipates that in carrying out the purposes of this Act the Secretary will fully consider the presence of surface water or ground water resources, and potential impacts, if any, to those resources.

Subsection (a)(2) directs the Secretary to carry out such activities at the three sites as the Secretary decides will provide useful information for selecting the preferred site. The bill requires that the selection of a preferred site be made by January 1, 1989 and that the Secretary's decisions about information gathering activities will be guided by this selection deadline. Information gathering activities should be structured in such a way not only to provide the greatest amount of useful information but also to ensure that this selection deadline is met.

Subsection (a)(2) also specifies that the Secretary shall not initiate construction of an exploratory shaft facility until such time as a preferred site is selected under this subsection. It is the Committee's understanding that the Department does not intend to construct exploratory shafts during the period between now and January 1, 1989. The Committee felt, however, that a statutory limitation would underscore its intent that exploratory shaft construction not be initiated prior to selection of a preferred site.

Upon selection of a preferred site, the Secretary is required to take all those actions that normally would have been taken under the first three titles of the Act to characterize the site and to prepare for licensing, construction, and operation of a repository at the preferred site. Activities at the sites not selected would be suspended as soon as possible, in such a way to ensure an orderly close out of site-specific work.

If a preferred site that has been selected by the Secretary is subsequently determined by the Secretary to be unsuitable for a repository, the Secretary must immediately make this determination known to all interested parties, suspend benefits payments under this title, and begin a process of selecting a new preferred site from the sites remaining of those considered under subsection (a). In selecting a new preferred site, the Secretary would repeat within six months the process outlined in subsection (a) for selection of a preferred site, including giving primary consideration in the selection to the same four factors listed in subparagraphs (a)(1)(A) through (D) and otherwise complying with the requirements of this section with respect to the selection process, including, for example, the environmental evaluation required under subsection (f).

Subsection (d) provides that the State in which the preferred site is located and any affected units of local government would be eligible for benefits payments under section 404 of this title.

Subsection (e) states that any decision of the Secretary to select a preferred site under subsection (a), to suspend work on other sites under paragraph (b)(2), or to reject a site chosen as a preferred site that later proves unsuitable under subsection (c) shall be in writing and shall be available to Congress and the public. It is the Committee's intent that these decisions shall be noticed in the Federal Register.

Subsection (e) also describes the process for judicial review of these decisions under subsection (a), paragraph (b)(2), and subsection (c). These decisions shall be subject to judicial review only by the Temporary Emergency Court of Appeals (TECA). Any action for judicial review must be filed within 30 days after public notice of the Secretary's decision. TECA is directed to decide any such case in 60 days. This deadline may be extended by 30 days, and the extension may be renewed twice. The total review time by TECA, therefore, shall be no more than 150 days.

Except as noted below, the grounds for review of these decisions shall be the standard grounds of the Administrative Procedures Act (5 U.S.C. 706). The Secretary's decision, therefore, could be found unlawful if found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; contrary to constitutional right, power, privilege, or immunity; in excess of statutory jurisdiction, authority, or limitations, or short of statutory rights;

or without observance of procedure required by law. Two additional grounds for review under the APA are not included as grounds for review in this instance because they are inapplicable to the process that would take place. These grounds are: lack of support by substantial evidence on the record of an agency hearing; and claim that the action is unwarranted by the facts to the extent that the facts are subject to a trial de novo by the reviewing court. These grounds are inapplicable because the Secretary's action under this section would not involve adjudicatory or rulemaking hearings on the record and because the review is not intended to involve extensive fact-finding by the reviewing court.

The Committee's objective in allowing judicial review only by TECA is to expedite the process of review. The Committee does not want to stop or delay the process of site characterization of a preferred site because of a prolonged court review. The exclusive right of review by TECA applies only to the Secretary's decisions under subsection (a), paragraph (b)(2) and subsection (c). This provision is not intended to restrict or preclude judicial review of other actions by the Secretary under this section, title, or Act except as expressly provided. Judicial review would apply to other actions in accordance with current law.

The Committee intends that the same process for judicial review under this subsection would be followed if a new preferred site were selected under subsection (c).

Subsection (f) requires the Secretary to prepare a detailed statement of the basis for his selection of the preferred site and to prepare an environmental evaluation as described in subparagraphs (1)(A) through (D). The Committee does not intend the detailed statement or environmental evaluation to be either an environmental impact statement or environmental assessment as required under the National Environmental Policy Act of 1969 (NEPA). Indeed, the environmental evaluation required is not pursuant to NEPA, but rather is specifically authorized and directed by this section as separate statutory authority. The detailed statement and environmental evaluation are documents required solely to support the Secretary's selection of a preferred site under this section. The intent of the environmental evaluation is to make it clear how the Department reached its decision on the preferred site. It is intended to be a comparative evaluation of the sites, which contains information on the relative pros and cons of the preferred site. These documents are not intended as a supplement to the previously-completed environmental assessment of the preferred site published by the Department in May 1986. As such, subsection (f) does not affect in any way any pending litigation on the adequacy of environmental assessments previously published by the Department.

Subsection (f)(2) requires the Secretary to solicit the comments of the National Academy of Sciences (NAS) and to provide an opportunity for public comment before preparing the environmental evaluation required under this subsection. The Committee intends that these comments relate to (a) what information NAS or the public believes should be considered prior to preparation of the environmental evaluation and (b) what information should be contained in the document. The Committee does not intend that a

draft of the environmental evaluation be provided for comment by NAS or the public.

Subsection (f)(3) requires the Secretary to preserve all writings, records of meetings, draft reports and studies, and other documents and recordings relating to the selection of the preferred site and to the completion of the environmental evaluation for a period of two years following the date of selection of the preferred site. Subject to existing law, this paragraph also requires the Secretary to make these documents available to the public upon request. The intent of this paragraph is that documents would be available for public inspection for two years after the time of selection of the preferred site. The Committee intends that the availability of documents would be subject to existing laws of disclosure. The Committee does not intend this paragraph to provide any new authority to allow access to or restrictions on disclosure of predecisional documents or information.

The intent of subsection (g) is self-explanatory.

Subsection (h) requires the Secretary to report to Congress, within one year after the selection of the preferred site, on the potential impacts of locating a reposito y at the site. The potential impacts to be addressed in the report are specified in paragraphs (1) through (14). This list is not intended to be exclusive.

Section 403

This section addresses the siting of monitored retrievable storage facilities. Construction of an MRS facility is not authorized under current law.

Subsection (a) annuls and revokes the Secretary's proposal to locate a monitored retirevable storage facility in Tennessee. Therefore, in carrying out the provisions of this section, the Secretary is directed to give no presumption or preference to the sites in that proposal by reason of their previous selection.

The Secretary is directed under this section to conduct a survey and evaluation of three potentially suitable sites for a monitored retrievable storage facility in not less than two States between the date of enactment and January 1, 1989. Criteria to be considered in this survey are contained in paragraphs (1) through (6) of subsection (b). The Committee does not intend these criteria to be exclusive.

Subsection (c) provides a mechanism for voluntary siting of an MRS facility. Therefore, the Committee intends the Secretary to make every reasonable effort to find a State or Indian tribe with a suitable site that is willing to accept the facility by January 1, 1989. If successful in locating a suitable site within such a State or on a reservation, the Secretary is authorized to construct and operate an MRS facility consistent with section 141 of the NWPA and in accordance with applicable agreements under the new title IV. To help in the effort to find a suitable site within a willing State or on an Indian reservation, the Secretary is authorized under paragraph (2) of subsection (c) to provide grants to a State, Indian tribe, or unit of local government to support an assessment of the feasibility of siting an MRS facility in its jurisdiction or on its reservation, in the case of an Indian tribe. The Committee intends that the

Secretary be afforded discretion in providing grants to States, Indian tribes, or units of local government.

If the Secretary does not select an MRS site within a willing State or on an Indian reservation under the provisions of subsection (c), the Secretary is required under paragraph (2) of subsection (d) to select a site from those surveyed in subsection (b) for an MRS facility. The Secretary's selection of a site under paragraph (2) of subsection (d) shall be on the basis of available information and shall be the site determined by the Secretary to be the most suitable for an MRS facility. This selection of a site shall be made between January 1, 1989 and October 1, 1989.

Subsection (e) provides for a veto by the State or Indian tribe selected to host an MRS facility under paragraph (d)(2). The procedure for notice of disapproval and Congressional review of such a notice is the same as the procedure set forth in current law for a repository.

Subsection (f) requires the Secretary to study the need for and feasibility of one or more monitored retrievable storage facilities in addition to the facility authorized under this section. The study shall examine the desirability of co-locating the site of an MRS facility for spent nuclear fuel from civilian nuclear activities with a site at which substantial volumes of high-level radioactive waste generated from atomic energy defense activities are located. The study shall also include the development of a plan for the management of defense high-level waste in a system that includes one or more MRS facilities capable of storing both high-level radioactive waste and spent nuclear fuel. The Committee intends that this study shall address other issues, as appropriate. The Secrertary is required to report to Congress on the results of this study by April 1, 1989. If additional MRS facilities are found to be desirable as a result of this study, the Secretary is required to notify Congress and potentially interested States and Indian tribes and submit to Congress site-specific proposals for construction of additional MRS facilities in accordance with provisions of section 141.

Subsection (g) provides that a State in which an MRS facility is located and any affected units of local government, or an Indian tribe, in the case that a site is located on a reservation, shall be eligible for benefits payments under section 404.

The intent of subsection (h) is self-explanatory.

Subsection (i) requires the Secretary to conduct a study and evaluation by October 1, 1988 of the use of dry cask storage technology at civilian nuclear power reactor sites for temporary storage of spent nuclear fuel until a repository is capable of receiving such fuel. The intent of the subsection is self-explanatory.

Subsection (j) requires the Secretary to submit to Congress by April 1, 1989 a report describing the potential benefits of designing a system to store spent nuclear fuel for at least 50 years prior to emplacement in a repository compared to the current system being designed for 10-year old fuel. Points to be addressed in the report are contained in subparagraphs (j)(1) (A) through (F).

Neither subsection (i) nor subsection (j) in any way limits, conditions, or qualifies the requirements of this title with respect to siting MRS facilities or geologic repositories.

Section 404

This section describes the conditions for entering into benefits agreements provided for in title IV.

Subsection (a) authorizes the Secretary to enter into benefits agreements with authorized representatives of States and Indian tribes. Benefits agreements must be negotiated in consultation with affected units of local government.

Subsection (b) provides that a benefits agreement can be amended only by mutual consent of the parties and terminated only under section 407.

Subsection (c) requires the Secretary to offer to enter into a benefits agreement with the Governor of the State containing the preferred site for the first repository. None of the three candidate sites selected for characterization for a repository is on an Indian reservation, so the Secretary would not seek to enter into a benefits agreement for a preferred site with an Indian tribe.

Subsection (d) requires the Secretary to offer to enter into a benefits agreement covering an MRS facility with appropriate States or Indian tribes.

Subsection (e) provides that only one benefits agreement can be in effect for a repository and only one for each MRS authorized by Congress.

Subsection (f) provides that decisions of the Secretary under this section are not subject to judicial review.

Section 405

This section describes the content of benefits agreements under section 404.

From the time of execution of a benefits agreement until spent nuclear fuel or high-level radioactive waste is received at the facility, annual payments under an agreement are $20 million for an MRS and $50 million for a repository. Upon receipt of spent fuel or high-level waste at the facility, annual payments would increase to $50 million for an MRS and $100 million for a repository and continue for the life of the facility. No payments shall be made before January 1, 1989. The Secretary may not restrict the purposes for which the payments are used, expect that not less than one-third of any payment must be transferred to affected units of local government.

Subsection (b) requires that a benfits agreement provide for a Review Panel as described under section 406, for waiver of the right of a State or Indian tribe to veto a site under title I of the NWPA, for sharing of relevant licensing information among the parties to the agreement, and for participation of the State or Indian tribe in the design of the repository or MRS. The Committee intends that the State or Indian tribe be allowed to participate in the design of the repository or MRS as specified in paragraph (4) of subsection (b), but the Committee does not intend for State or Indian tribe concurrence to be required in order for the Secretary to proceed with a design or with the preparation of documents.

Subsection (c) provides that benefits payments be made from the Nuclear Waste Fund and states that the signature of the Secretary on a valid benefits agreement shall constitute a commitment by

the United States to make payments in accordance with the agreement.

Section 406

This section describes the Review Panel referred to in section 405.

Subsection (a) provides that the Review Panel have seven members: two chosen by the Governor, two by affected units of local government, and three chosen by the Secretary. The Secretary's selections are the panel chairman, a member to represent persons paying into the Nuclear Waste Fund, and a member to represent other public interest.

Subsection (b) specifies the term, compensation, and payment of necessary expenses of members of the Review Panel. Expenses of the panel would be paid from the Nuclear Waste Fund.

Subsection (c) enumerates the duties of the Review Panel.

Subsection (d) requires the Secretary to make available promptly any information requested by the Review Panel or its Chairman.

Subsection (e) exempts the panel from the requirements of the Federal Advisory Committee Act.

Section 407

This section addresses requirements for the siting of a second repository.

Subsection (a) prohibits the Secretary from conducting site-specific activities with respect to a second repository unless these activities are specifically authorized by Congress and money is appropriated for them. This provision takes away the Secretary's authorization to conduct site-specific activities. A subsequent Act of Congress would be required before site-specific activities could be conducted.

Subsection (b) removes the requirement in current law that the Secretary nominate and recommend to the President sites for a second repository and that the President recommend to Congress a site for a second repository.

Subsection (c) requires the Secretary to report between January 1, 2007 and January 1, 2010 on the need for a second repository. The Committee intends that the Secretary be able to conduct whatever non-site-specific work is necessary to complete this report.

Section 408

This section authorizes the Secretary to terminate a benefits agreement if the site covered by the agreement is disqualified for its failure to comply with guidelines and technical requirements established in accordance with current law, or if the Secretary determines that the Nuclear Regulatory Commission cannot license the facility within a reasonable time. A State or Indian tribe may terminate a benefits agreement only if the Secretary disqualifies the site. Decisions made by the Secretary under the section are not subject to judicial review.

Section 409

Subsections (a) and (b) preserve provisions of the NWPA and powers of the Secretary under current law that are not expressly affected by this title.

Subsections (c) and (d) provide that the requirements of the National Environmental Policy Act of 1969 (NEPA) shall apply as provided in the NWPA, except that the provisions of section 114(a)(1)(D) and section 114(f) requiring consideration of three sites for a repository would not apply.

The Committee intends that the selection of a preferred site under section 402(a) of title IV should not be considered a major federal action requiring preparation of an environmental impact statement or an environmental assessment. The Committee does not believe that an additional NEPA statement should be required at the time of selection of a preferred site since an environmental assessment has already been completed for each of the three candidate sites previously selected for characterization and since there is a requirement under current law to prepare an environmental impact statement, following site characterization, prior to the time that a single site is recommended to the President for development as a repository.

The Committee also intends that any other actions of the Secretary under this title shall not be considered major federal actions for the purposes of NEPA compliance except as provided in the requirements of title I.

Section 410

This section limits appropriations for activities under the NWPA to $567 million in fiscal year 1988, $545 million to fiscal year 1989, and $484 million in fiscal year 1990.

SECTION 3

This section amends the Nuclear Waste Policy Act of 1982 by adding a new section 10 entitled "Reports". The new section 10 requires the Secretary to submit two reports to Congress.

Subsection (a) requires the Secretary to contract with the National Academy of Sciences for a study of the major facets of reprocessing of spent nuclear fuel, including economics, the impact of reprocessing on the potential for the proliferation of nuclear weapons, and the effects of reprocessing on nuclear waste management. The Secretary is required to submit this report to Congress by September 30, 1989.

Subsection (b) requires the Secretary to submit a report to Congress within 270 days of enactment of this section on subseabed disposal of spent nuclear fuel and high-level radioactive waste.

SECTION 4

This section amends subtitle A of title I of the Nuclear Waste Policy Act of 1982 by adding a new section 126 entitled "Transportation".

Subsection 126(a) requires that spent nuclear fuel and high-level radioactive waste be transported under the program mandated by the NWPA in packages that have been certified by the Nuclear Regulatory Commission according to its regulations. The Committee intends that this requirement apply to shipments of both civilian and defense spent nuclear fuel and high-level radioactive waste that are transported under the program mandated by the NWPA.

Subsection 126(b) requires that the Secretary abide by NRC regulations regarding advance notification of State and local governments prior to transportation of such fuel or waste under the program mandated by the NWPA.

Subsection 126(c) requires the Secretary to provide technical assistance and funds to States for training of public safety officials with respect to transportation of spent nuclear fuel and high-level radioactive waste. It is the Committee's intent that such technical assistance and training will cover procedures for routine transportation as well as for emergency response. Such training and technical assistance should focus on prevention of accidents in transportation as well as emergency response after an accident. The Committee intends that the Department provide technical assistance and funds for training of State and local public safety officials, but the Committee believes that the actual training of local officials should be coordinated at the State level. Technical assistance and funds would be provided to the State, and it would be up to the State to coordinate training for local officials and to determine how funding for emergency response training should be spent. The Committee believes that it should be up to the State to determine the appropriate delineation of State and local responsibility in such matters.

Subsection 126(d) directs NRC to require actual tests of sample full-scale transportation packages prior to certifying any package design for the transportation of spent nuclear fuel or high-level radioactive waste under subtitle A or subtitle C of title I of the NWPA.

Subsection 126(e) directs NRC to conduct a survey of the packages for transportation or disposal of spent nuclear fuel or high-level radioactive waste used by other nations. Based on that survey, NRC shall submit a report to Congress by January 1, 1989 that describes foreign designs and comments on the potential for such designs to meet or exceed applicable NRC regulations or standards.

SECTION 5

Section 5 amends the repository site approval process under title I of the Nuclear Waste Policy Act of 1982 in two respects.

Subsection (a) amends section 114(a)(1) of the NWPA by adding a new subparagraph (I). This subparagraph provides that any recommendation to the President of a site for development of a repository under section 114(a) be accompanied by a statement by the Secretary, after consultation with the Secretary of Defense, that construction and operation of a repository at that site would not seriously jeopardize national security by reason of interference with national defense activities nearby.

Subsection (b) amends section 116 of the NWPA by adding a new subsection (e) to provide certain adjacent States with the same rights and opportunities to participate in the repository siting process as a State containing a candidate site under the existing Act. The adjacent States included under this subsection would be those that both border on the State in which the candidate site is located and lie contiguous to a river, waterway, or acquifer whose flow, as

determined by the Secretary of Interior, passes adjacent to or underneath the site, and continues downstream or down gradient to the bordering State.

The Committee intends the Secretary of Interior shall be the arbiter with respect to whether an adjacent State lies contiguous to a river, waterway, or acquifer whose flow passes adjacent to or underneath the candidate site, and continues downstream or down gradient to such adjacent State. The Committee intends that the direction of the flow of the river, waterway, or acquifer shall be the important factor in determining the rights of adjacent States. For example, in a case where an acquifer underlies State A, which contains a candidate site, and also underlies a State on its eastern border and a State on its western border—if the acquifer flows to the east, then the State to the east would be entitled to rights as an adjacent State but the State to the west would not.

The Committee intends that this subsection shall apply only with respect to the siting of a repository and shall not apply with respect to siting of an MRS.

SECTION 6

Section 6 amends subtitle A of title I of the Nuclear Waste Policy Act of 1982 by adding a new section 127. This section requires the Secretary, in siting federal research projects, to give special consideration to proposals from States where a repository is located.

Cost and Budgetary Considerations

The Congressional Budget Office estimate of the costs of this measure has been requested but was not received at the time the report was filed. When the report is available, the Chairman will request it to be printed in the Congressional Record for the advice of the Senate

Regulatory Impact Evaluation

In compliance with paragraph 11(b) of Rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact of the bill as reported.

This bill is not a regulatory measure in the sense of imposing federally-established standards or significant economic responsibilities on private individuals or businesses. The bill amends the Nuclear Waste Policy Act of 1982 to redirect the national program for the disposal of nuclear waste operated by the Department of Energy.

The Secretary of Energy executes the functions of waste disposal under the NWPA in consultation with affected States, Indian tribes and units of local government. Certain activities of the Secretary are regulated by the Nuclear Regulatory Commission under current law. Nothing in the bill changes the scope or character of this basic scheme.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would be required of private businesses under the bill. The primary paperwork impact will be

felt by the Department in performing the studies, analyses and evaluations required under the amendments made by the bill.

Executive Communications

There were no legislative reports received by the Committee from the Administration relating to this legislation. The following is the written testimony submitted by

The Administration at hearings held on January 29, February 5, April 28, April 29, June 29, and July 16, 1987; and

The Nuclear Regulatory Commission at hearings held on April 28 and June 29, 1987.

STATEMENT BY

JOHN S. HERRINGTON
SECRETARY OF ENERGY

before the

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JANUARY 29, 1987

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to review policy issues of interest to the Committee regarding the program being carried out under the Nuclear Waste Policy Act of 1982 (the NWPA). With me is Ben C. Rusche, my Director of the Office of Civilian Radioactive Waste Management.

We have prepared a draft amendment to the Mission Plan for the Civilian Radioactive Waste Management Program. In that document, which we are sending to States and affected Indian Tribes, the Nuclear Regulatory Commission and other Federal agencies for comment -- and will make available for public inspection -- we discuss significant developments and new information in the waste program.

The Mission Plan is intended to keep Congress fully informed on progress in the program and the amendment will ensure that the Plan reflects current program status. After a 60-day comment period, DOE will revise the amendment in response to the comments

as appropriate and will submit it formally to Congress for information and direction. We would expect this to occur in about 120 days from now. With your permission, Mr. Chairman, I would like at this time to submit a copy of the draft amendment for the record.

Today, I would like to give a brief status of the waste program and then focus on the substantive issues which I believe are of main interest to the Committee and which are addressed in the Mission Plan amendment.

Last May, I nominated five sites in Mississippi, Nevada, Texas, Utah and Washington as suitable for characterization and recommended to the President three of those sites for characterization as candidates for the first repository. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in Washington. The President approved my recommendation.

With the President's approval of the three sites to characterize, we have finally passed beyond the crucial decision of where to focus our repository siting efforts and that action formally marked the beginning of site characterization.

Site characterization will take five-to-seven years, depending on the site.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels; and we are proceeding with other allowable characterization activities.

Following the announcement of the President's approval of three sites for characterization as candidates for the first repository, I announced that based on the progress in selecting the first repository and other factors, DOE had reassessed the timing of the Department's activities toward identification of candidates for a second repository. I announced that DOE had decided to postpone indefinitely plans for any site-specific work related to a second repository.

We have not abandoned a second repository; we are continuing studies for a second repository, as required by the NWPA. Those studies are focusing on generic technical issues and analyses and a continuation of the current program of international cooperation.

We continue to believe that a Monitored Retrievable Storage (MRS) Facility should be an integral part of the waste management system. Although legally enjoined from submitting the proposal to Congress, we stand ready to submit it for consideration as soon as permitted.

As stated more than a year ago in review copies of a proposal we made available, we believe that an MRS centrally located to the majority of the spent fuel generated would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository. DOE's intent regarding MRS is to fulfill its statutory obligations under the NWPA and to submit the proposal on MRS to Congress at the earliest date practicable.

Significant progress has been made regarding transportation -- another integral part of the waste disposal system. DOE has issued both a Transportation Business Plan and a Transportation Institutional Plan. The Business Plan presents strategies for procuring shipping casks and support services, and the Institutional Plan lays the foundation for interactions among interested parties for resolution of transportation issues. In addition, we have issued a request for proposals for design and engineering of shipping casks and fabrication of prototypes.

There have been many other achievements to date in the program, but instead of further discussion of those, I would like now to focus on the main points discussed in the draft Mission Plan amendment and which I believe are the principal policy issues of interest to the Committee:

1. Indefinite postponement of site-specific work for a second repository.
2. Extension of the date contemplated for start-up

operation of the first repository from January 31, 1998, to 2003 to allow time to carry out the necessary high-quality technical program.

3. Inability to submit the Monitored Retrievable Storage (MRS) proposal to Congress required by Section 141 of the NWPA because of litigation. And,
4. Interactions with States, affected Indian Tribes, and the public.

The experience gained in achieving the important milestone of approval of sites for characterization, and advances in the technical planning of the program, have led us to reassess the program and schedule for the first repository. The new schedule -- as presented in the draft Mission Plan amendment -- shows a 5-year extension of the date for the waste acceptance at the first repository, from 1998 to 2003. The table attached to my statement shows the current schedule as compared to the schedule contained in the 1985 Mission Plan.

There are several reasons for the near-term extension. Among them are:

- o The recognition that more time should be provided in the future for consultation and interaction with the States, affected Indian Tribes, and other parties; and,

- The recognition that more technical information is needed.

Since passage of the NWPA, many parties have insisted that, given the controversial nature of the program, the schedule specified in the Act was not realistic and not achievable. It has been pointed out on many occasions that the schedule and the siting process are not reconcilable -- that to achieve one, it would be necessary to sacrifice the other.

DOE has attempted to meet both objectives and developed an aggressive schedule that would have permitted the first repository to begin accepting waste in January 1998. At the same time, Mr. Rusche and I have insisted that the schedule would not be allowed to prevail at the expense of technical excellence and public participation.

We now recognize that more information, more consultation and more time is required in the near-term to ensure public confidence in and development of the first repository for long-term (permanent) disposal. We will remain optimistic in our planning, but realize that for many early actions, we underestimated the time required. Furthermore, DOE recognizes the potential for contingencies that are yet to appear.

The 5-year extension for start-up operations at the first repository, therefore, requires a reevaluation of the waste acceptance

strategy. Based on a reevaluation, we believe that the most advantageous course is the development of an MRS. And as presented in the draft amendment, DOE believes it can meet the 1998 commitment through the development of an MRS facility.

With an MRS capable of receiving waste in 1998, we can meet the contractual obligation with nuclear-generating utilities to begin receiving waste in 1998.

We are, therefore, hopeful that the legal impediment will be removed shortly and that we will be permitted to submit the MRS proposal to Congress for consideration.

With regard to the indefinite postponement of site-specific activities for a second repository, my decision last May was based on a number of factors, including declining projections of the rates at which spent fuel will be discharged from commercial nuclear powerplants; progress in siting the first repository and confidence in finding suitable sites among the three sites approved by the President for characterization; the advantages to be gained from the experience of the first repository; the expectation of Congressional approval for the MRS facility; and, responsible fiscal management.

I would like to point out, again, that we have not abandoned a second repository. In fact, even the lowest current projections of spent fuel generation indicate that the second repository will be needed. DOE, therefore, remains fully committed to a two-repository system.

The specific requirement related to the second repository is stated in the NWPA in terms of the maximum amount of spent fuel that the Nuclear Regulatory Commission can allow to be emplaced in the first repository until a second repository is in operation. The NWPA sets this figure at 70,000 metric tons of uranium.

Under the revised schedule for the first repository, this limit would be reached sometime after the year 2025 if the annual rate of waste emplacement is 3,000 metric tons. The actual schedule for the second repository, however, is yet to be determined; it will depend on more-refined estimates of spent fuel generation rates, the time needed for the first repository to reach the limit of 70,000 metric tons and the time needed to develop the second repository.

The experience of siting the first repository suggests that site-specific screening leading to the identification of potentially acceptable sites should start about 25 years before the start of waste acceptance for disposal. Therefore, to have the second repository available by about 2025, site specific studies need not start until the middle to late 1990s.

Another important issue is interaction with States and affected Indian Tribes and the public. The NWPA requires DOE to seek to enter into and negotiate written Consultation and Cooperation (C&C) agreements with States and affected Indian Tribes after approval of candidate sites for characterization, or

earlier, if an eligible State or Indian Tribe requests. Some formal as well as informal negotiations have occurred, but as yet no formal C&C agreements have been concluded.

Given the nature of the program and the reality that the perspectives of the States and affected Indian Tribes often differ from DOE's, we recognize that formal agreements may not be easy to reach. But we also recognize that the success of the waste-management program may depend largely on the success of institutional relations as well as interactions with the public.

We plan to increase our efforts to improve productive institutional relations and to negotiate formal C&C agreements. In this regard, we are considering a number of new initiatives to encourage these negotiations. For example, preliminary or partial agreements or memoranda of understanding might be useful.

Conclusion

In conclusion, DOE has adopted the principle that its schedule would not be pursued at the expense of consultation and interaction with affected States and Indian Tribes and the public.

The revised schedule for both the first repository and site specific activities for a second repository allows more time for interactions with affected and interested parties and for acquiring additional information necessary to successfully develop the waste disposal system.

Furthermore, we sincerely hope that the amendment to the Mission Plan will provide a suitable vehicle for Congress to provide any statutory direction it believes is needed for our conduct of the program.

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions you may have and, with your permission, I may call on Mr. Rusche for more details.

##########

Schedule for the first repository [a,b]

Milestone	Current schedule	1985 Mission Plan schedule
Start of exploratory-shaft construction		
Tuff	Second quarter 1988	Third quarter 1986
Basalt	Third quarter 1988	Third quarter 1986
Salt	Fourth quarter 1989	Third quarter 1987
Start of in-situ testing		
Tuff	Fourth quarter 1989	Third quarter 1988
Basalt	First quarter 1992	Fourth quarter 1988
Salt	Fourth quarter 1991	Second quarter 1989
End of site characterization[c]		
Tuff	First quarter 1992	Third quarter 1989
Basalt	First quarter 1993	Third quarter 1989
Salt	First quarter 1993	Third quarter 1989
Draft environmental impact statement	Fourth quarter 1993	Third quarter 1990
Final environmental impact statement	Fourth quarter 1994	Fourth quarter 1990
Submittal of the site-selection report to the President	Fourth quarter 1994	First quarter 1991
Submittal of the license application to the Nuclear Regulatory Commission	First quarter 1995	Second quarter 1991
Receipt of a construction authorization from the Nuclear Regulatory Commission	First quarter 1998	Third quarter 1993
Start of construction	First quarter 1998	Third quarter 1993
Start of phase 1 operations	First quarter 2003	First quarter 1998
Start of phase 2 operations	Second quarter 2006	First quarter 2001

[a]The schedule is given in calendar-year quarters.

[b]This schedule is based on a budget requirement of $725 million for fiscal year 1988.

[c]End of the testing necessary for the selection of the repository site and the preparation of the draft environmental impact statement.

STATEMENT BY

BEN C. RUSCHE, DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U. S. DEPARTMENT OF ENERGY

BEFORE THE

ENERGY AND NATURAL RESOURCES COMMITTEE
UNITED STATES SENATE

FEBRUARY 5, 1987

76-701 0 - 87 - 2

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss recent developments and issues of concern to the Committee regarding the program being carried out under the Nuclear Waste Policy Act of 1982 (NWPA).

Last week, we released a draft amendment to the Mission Plan for the Civilian Radioactive Waste Management Program and the Secretary testified before you to discuss the purpose of the information contained in the draft amendment. We have sent it to States and affected Indian Tribes, the Nuclear Regulatory Commission and other Federal agencies for comment and have made it available for public inspection. During the 60-day comment period, we plan to meet with affected States and Indian Tribes to answer any questions they may have regarding the amendment that may assist them in formulating their formal comments.

The purpose of the Mission Plan amendment is to keep Congress, as well as others, informed on progress in the program. When the Mission Plan was issued in 1985, we said it is "today's best estimate of the scientific, engineering and institutional information needed to make informed decisions as we proceed with developing ... the disposal system." We explained that it is a planning document, and as such, we would review it annually and revise it on an as-needed basis. The purpose of amending the Plan is to ensure that it reflects current significant developments and plans.

The draft amendment released last week is the first such amendment and presents our estimate of how and on what schedule we believe we can best fulfill our responsibilities in carrying out the repository program. After the 60-day comment period, we will revise the amendment in response to the comments as appropriate and will submit it formally to Congress.

The focal points of the draft Mission Plan amendment are:

- Achievements in the first repository program including the nomination and recommendation of sites for detailed site characterization;
- As a result of reevaluations of the work necessary to proceed, a five-year extension of the schedule for the first repository;
- New waste-generation data that, along with other considerations, indicate that it is prudent to indefinitely postpone site specific activities for the second repository while continuing technical development activities;
- Developments concerning the submission to Congress of a proposal for a monitored retrievable storage (MRS) facility as an integral part of the waste management system; and,
- Actions taken and progress made toward better defining the consultation and cooperation process with eligible States and affected Indian Tribes.

With these points in mind, I would like to discuss the status of the program as it is reflected in the draft Mission Plan amendment.

First Repository

Last May, DOE nominated five sites in Mississippi, Nevada, Texas, Utah and Washington as suitable for characterization and issued Environmental Assessments for each of those sites. The Secretary recommended to the President three of those sites for characterization as candidates for the first repository. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in Washington. The President approved the Secretary's recommendation and that action formally marked the beginning of the site characterization phase.

This represented a major milestone in the siting of the first repository and years of work in gathering and analyzing geologic and environmental data from site studies that began before passage of the NWPA. Reaching this stage of determination permits us to thoroughly investigate, evaluate and compare geologic, environmental, transportation and safety factors at each of the three sites.

Site characterization will take five-to-seven years, depending on the site. It includes laboratory investigations; surface-based data-collection activities, such as geologic mapping and seismic surveys; studies conducted through the drilling of boreholes; and studies conducted in the candidate host rock in exploratory-shaft facilities.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels.

The current activities at or related specifically to each of the candidate sites, include the following:

o At the Nevada site, land access is being pursued with other Federal agencies.

o At Washington, site plans are proceeding for hydrology tests that will precede exploratory shaft drilling.

o At the site in Texas, DOE is proceeding with its plans for obtaining access to the land, and later next month, about 10 DOE and contractor personnel from our DOE Columbus, Ohio, Salt Office will be moving near the site to begin setting up a DOE office. Unlike the Nevada and Washington candidate sites, there has been no DOE office for this program located in the State.

A further elaboration of planned activities at each of the sites is contained in Appendix A of the draft Mission Plan amendment.

Two major efforts under the NWPA and associated with the beginning of site characterization are:

1. Negotiations for formal consultation and cooperation agreements with affected States and Indian Tribes; and,

2. The development of site characterization plans.

Consultation and Cooperation

The NWPA requires DOE to seek to enter into and negotiate written Consultation and Cooperation (C&C) agreements with States and affected Indian Tribes after approval of candidate sites for characterization, or earlier, if an eligible State or Indian Tribe requests. Some negotiations have occurred, but as yet no C&C agreements have been concluded. The draft amendment to the Mission Plan contains a report of actions taken and progress made toward better defining the consultation and cooperation process with eligible States and Indian Tribes.

Given the nature of the program and the reality that the perspectives of the States and affected Indian Tribes often differ from DOE's, we recognize that agreements may not be easy to reach. We plan to increase our efforts to negotiate C&C agreements. In this regard, we are considering a number of new initiatives to encourage these negotiations. For example, DOE is willing to consider the adoption and implementation of de facto agreements or memoranda of understanding that would contain less than is required to be in the C&C agreements should the State or affected Indian Tribe find this advantageous. This could allow both parties to adopt agreed-on procedures immediately, even before the C&C agreement is fully developed. Such an approach is attractive because it recognizes the importance and the achievements of the negotiation process that has been under way since the NWPA was signed into law.

But C&C negotiations and agreements are but one part of the process of working with affected parties. Every telephone call, every discussion, every meeting, every piece of paper exchanged between DOE and States, Indian Tribes and the general public provides opportunities for "consultation" and "cooperation" among parties.

We believe these daily opportunities represent the spirit and intent of the requirements regarding participation, consultation and cooperation. And we look forward to expanding these opportunities. In addition, I look forward to arrangements where State and Tribal technical staff actually work shoulder to shoulder with us, to assure active participation in site characterization.

There have been a number of actions outside C&C negotiations which have been taken recently in response to recommendations by the States and Indian Tribes. For example:

- The participation by States and affected Indian Tribes in DOE coordinating groups; and,
- The expansion of the Quarterly Meetings with States and affected Indian Tribes for the public to attend.

There are currently twelve Coordinating Groups and they are listed in Table 1. The Coordinating Groups meet two-to-four times per year and provide a forum for the discussion of common problems and their resolution. It is expected that additional coordinating groups will be established and that existing ones will be abolished as requirements and priorities change.

TABLE 1.

EXISTING COORDINATING GROUPS

The following coordinating groups are currently in existence and supported by their own charters:

- Site Characterization Plan Coordinating Group
- Geoscience Coordinating Group
- Repository Coordinating Group
- Waste Package Coordinating Group
- Performance Assessment Coordinating Group
- Licensing Coordinating Group
- Quality Assurance Coordinating Group
- Transportation Coordinating Group
- Institutional Affairs Coordinating Group
- Project Management Coordinating Group
- OCRWM Information Resources Management Coordinating Group
- Environmental Coordinating Group

Since Summer 1984, Quarterly Meetings have been held with States and affected Indian Tribes to discuss topics mutually agreed upon for the agenda. As a result of recommendations by the States and Indian Tribes, these meetings will now be open to the public. The first such meeting is scheduled for February 12 in Spokane, Washington. The agenda is being coordinated among the States, the Indian Tribes and DOE. A public announcement is being made by DOE Headquarters and the nearest DOE Operations and Project Office in Richland, Washington. The draft Mission Plan amendment will be a major subject for discussion at the meeting.

I mention these activities because I believe it is important to point out that while formal consultation and cooperation negotiations are only required to begin after a candidate repository site is approved for site characterization, consultation and cooperation is an everyday activity and responsibility -- DOE's responsibility, the States' and Indian Tribes' responsibility -- the responsibility of all the affected parties to consult and to cooperate.

Site Characterization Plans

Another major effort associated with site characterization is the preparation of a plan for characterizing each site. This plan--called a site characterization plan (SCP) -- is a major and intensive effort. For example, the scope and magnitude of this effort can be gauged from the SCPs now being prepared for publication: in each plan, the description of the characterization program alone covers several thousand pages.

Copies of each draft chapter are being shared with the NRC, States, and Indian Tribes for comment as they become available. The NWPA requires that such a plan for any candidate site be prepared, made available to the public and that public hearings be held by DOE in the vicinity of a candidate site before proceeding to sink the exploratory shafts at the site.

The SCPs are key documents and of major importance to States, Indian Tribes and the public -- as well as to NRC and to us. These plans will contain:

- o A detailed specification of the information to be developed for each site, the conceptual waste package and repository design, and the issues that need to be addressed;
- o Schedules for a logical sequence of testing and the timing for the issuance of publications on technical procedures, technical findings, and issue resolution; and,
- o Milestones and decision points to be encountered along the way.

There is intense interest in the SCPs, since they will guide DOE during the site characterization phase until a license application is submitted to the Nuclear Regulatory Commission. The SCPs and periodic progress reports that DOE will be making, will have a crucial role in interactions with the NRC, and as vehicles for presenting information to the States, Indian Tribes, Congress, utilities and the public.

The main purposes of site characterization are to determine whether a candidate site is suitable for a repository and to provide the bases for the selection of a repository site and for the construction authorization request to the Nuclear Regulatory Commission -- tasks that have never been done before. Therefore, finding answers to relevant questions are the main focus of site characterization.

First Repository Schedule

The experience gained in achieving the important milestone of approval of sites for characterization, and advances in the technical planning of the program, have led us to reassess the program and schedule for the first repository. The new schedule -- as presented in the draft Mission Plan amendment -- shows a 5-year extension of the date for the waste acceptance at the first repository, from 1998 to 2003.

This 5-year extension of the operation of the first repository is primarily a result of additional time needed in the near term. This is not the first time that we have come to realize that additional time is needed to carry out certain activities required by the NWPA. To better illustrate where additional time has been needed and where we believe it is needed now, Table 2 in my statement shows the current schedule as compared to the schedule contained in the 1985 Mission Plan.

There are several reasons for the near-term extension. Among them are:

- o The experience to date that more time has been required to involve States and Indian Tribes in review and discussion.

TABLE 2.

NUCLEAR WASTE POLICY ACT MILESTONES

COMPARISONS WITH NWPA, JUNE 1985 MISSION PLAN, AND DRAFT

AMENDMENT TO THE MISSION PLAN

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT	ACTUAL
1. Identify States w/ potentially acceptable sites	4/7/83	--	--	2/2/83
2. State/Tribal notification as to being potentially acceptable sites	7/7/83	--	--	2/2/83
3. Issue Siting Guidelines	7/7/83	12/84	--	12/84
4. Issue Mission Plan	5/84	--	--	6/85
5. Issue Environmental Assessments	--	11/85	--	5/86
6. 1st Repository Nomination/Recommendation of sites suitable for characterization	1/1/85	11/85	--	5/86
7. Presidential Approval of sites	--	1/86	--	5/86
8. Seek to enter into C&C agreements	7/86	--	--	7/86 *
9. Issue SCP's	--	3/86 tuff 3/86 basalt 10/86 salt	mid-87 tuff mid-87 basalt 1st Qt.88 salt	-- -- --
10. Initiate Construction of Exploratory Shafts	--	3rd Qt. 86 tuff 3rd Qt. 86 basalt 3rd Qt. 87 salt	2nd Qt. 88 tuff 3rd Qt. 88 basalt 4th Qt. 89 salt	-- -- --

* Informal C&C negotiations were initiated with the State of Washington, and the Yakima and Umatilla Indian Tribes in mid 1983

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT	ACTUAL
11. Testing to support DEIS complete	--	12/89	1st Qt. 92 tuff 1st Qt. 93 basalt 1st Qt. 93 salt	-- -- --
12. Issue FEIS	--	12/90	4th Qt. 1994	--
13. President recommends site to Congress	3/31/87	3/91	4th Qt. 1994	--
14. Site designation effective	5/91	5/91	1st Qt. 1995	--
15. Submit License Application to NRC	--	5/91	1st Qt. 1995	--
16. NRC issues Construction Authorization	--	8/93	1st Qt. 1998	--
17. Initiate Repository Construction	--	8/93	1st Qt. 1998	--
18. NRC issues License for Phase 1 Operations	--	12/97	1st Qt. 2003	--
19. Phase 1 Repository Operations begins	--	1/98	1st Qt. 2003	--
20. Phase 2 Repository Operations begins	--	2/01	2nd Qt. 2006	--

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT	ACTUAL
1. 2nd Repository Nomination/Recommendation of sites suitable for characterization	7/1/89	10/91	mid- to late-90s	
2. President recommends 2nd Repository site to Congress	3/31/90	3/98	2010 to 2020	

---

1. Submit to Congress report describing R&D activities necessary to develop MRS proposal	7/83			6/83
2. Submit to Congress detailed study on the need for and feasibility of MRS	6/1/85	1/86	As soon as permitted	

- The recognition that more time should be provided in the future for consultation and interaction with the States, affected Indian Tribes, and other parties; and,
- The recognition that more technical information is needed.

Since passage of the NWPA, many parties have insisted that, given the controversial nature of the program, the schedule specified in the Act was not realistic and not achievable. And on several occasions, the schedule and processes prescribed in the NWPA have been expanded, as shown in Table 2, to provide additional time for input by affected and interested parties, for additional review of DOE actions or documents and for incorporation of comments or resolution of issues.

At my confirmation hearing before this Committee almost three years ago, I pledged that the schedule would not be allowed to prevail at the expense of technical excellence, safety, and public participation. And I continue to maintain that position. I respect the timetables, but where additional time appears to be needed to ensure the quality of the product, as a manager, I must recommend additional time.

We now recognize that more information, more consultation and more time is required in the near-term to ensure development of the first repository for long-term (permanent) disposal. We will remain optimistic in our planning, but realize that for many early actions, we underestimated the time required. Furthermore, DOE recognizes the potential for contingencies that are yet to appear.

Second Repository

With regard to the indefinite postponement of site-specific activities for a second repository, the Secretary's announcement last May was based on a number of factors, including declining projections of the rates at which spent fuel will be discharged from commercial nuclear powerplants; progress in siting the first repository; the expectation of Congressional approval for the MRS facility; and, responsible fiscal management.

I would like to point out, again, that we plan to propose construction of a second repository. In fact, even the lowest current projections of spent fuel generation indicate that the second repository will be needed. DOE, therefore, remains fully committed to a two-repository system.

Our current program regarding the second repository focuses on technology development. A significant portion of these studies is expected to involve cooperative efforts with other countries through continuation of the current program of international cooperation, such as that with Canada where we are participating with them in the extension of the depth of the shaft at their Underground Research Laboratory in Manitoba near Winnipeg.

A requirement related to the second repository is stated in the NWPA in terms of the maximum amount of spent fuel that the Nuclear Regulatory Commission can allow to be emplaced in the first repository until a second repository is in operation. The NWPA sets this figure at 70,000 metric tons of uranium.

Under the revised schedule for the first repository, this limit would be reached sometime after the year 2025 if a maximum annual rate of waste emplacement is 3,000 metric tons. The actual schedule for when the second repository should be considered, however, should be based on more-refined estimates of spent fuel generation rates, the time needed for the first repository to reach the limit of 70,000 metric tons and the time needed to develop the second repository.

The experience of siting the first repository suggests that site-specific screening leading to the identification of potentially acceptable sites should start about 25 years before the start of waste acceptance for disposal. Therefore, to have the second repository available by about 2025, site specific studies need not start until the middle to late 1990s.

Monitored Retrievable Storage (MRS)

The 5-year extension for start-up operations at the first repository, means a repository would not start operation in 1998. We believe that the most advantageous course is the development of an MRS. With an MRS capable of receiving waste in 1998, we can begin receiving waste in 1998 as well as provide the other major benefits an MRS provides as part of the integrated waste disposal system.

We had originally intended to submit a proposal on MRS to Congress in June 1985, but we notified Congress of a delay in the submission until January 1986. In August 1985, the State of Tennessee filed suit against the Department claiming that the Department failed to consult properly with the State prior to the identification of proposed sites for the MRS facility. We believe that we went beyond the requirements of the Act by allowing States and local communities to review and comment on our studies well before we submitted the proposal to Congress. The State provided formal comments on the proposal which will be included with our proposal when submitted.

On February 5, 1986, the U.S. District Court for the Middle District of Tennessee ruled in favor of the State and subsequently, on February 7, issued an injunction prohibiting the Department from submitting the MRS proposal to Congress.

The decision and the injunction were appealed by DOE to the U.S. Court of Appeals for the Sixth Circuit. On November 25, 1986, the Court of Appeals ruled in favor of DOE's position in the dispute, indicating that the actions taken by the Department in identifying sites for the MRS and in consulting with the State did not violate the Act.

Subsequently, the State filed a petition for stay or extraordinary writ of injunction and for a rehearing with a suggestion that the case be reheard en banc. On December 31, 1986, the Circuit Court denied the petition for a rehearing, but on January 7, 1987, granted a stay for 30 days to allow the State to appeal to the Supreme Court. Assuming a timely filing of a writ of certiorari by the State, the stay will continue until final disposition by the Supreme Court.

Our intent regarding MRS is to fulfill our statutory obligations under the Act and submit the proposal on MRS to the Congress at the earliest date practicable.

Conclusion

Following the President's approval of the Secretary's recommendation to characterize sites in Nevada, Texas and Washington for the first geologic repository, and the Secretary's decision to recommend the redirection of the second repository program by postponing indefinitely site specific work until the mid-1990's, we have reevaluated the program and schedule to put in place the Nation's high-level radioactive waste disposal system. Our conclusions and proposal are reported in the draft Mission Plan amendment. We recognize that there are areas of congressional concern, particularly involving the first and second repositories and the MRS proposal. These matters are addressed in the draft Mission Plan amendment.

We believe we have honored our commitment to provide through the draft Mission Plan amendment a basis for informed evaluation of the program and for the Congress to provide direction needed for the conduct of the program. We believe that the plan in the draft amendment presents the program that will allow us to fulfill best the objectives of the Act in light of our experience and best judgment.

Mr. Chairman this concludes my remarks. I thank the Committee for the opportunity to discuss the program and to answer questions you may have.

##########

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

U. S. DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

APRIL 28, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss activities related to site characterization of candidate sites for the Nation's first geologic repository for spent nuclear fuel and high-level radioactive waste.

As you requested in your letter of invitation, I will focus my testimony on site characterization plans, the strategy for resolving technical issues raised by the Nuclear Regulatory Commission (NRC) during site characterization, plans for interacting with the National Academy of Sciences during site characterization and our strategy for assuring technical excellence through each step.

On May 28, 1986, the President approved the Secretary of Energy's recommendation of three sites for characterization as candidates for the Nation's first geologic repository for spent fuel and high-level waste. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in the State of Washington.

This was a major milestone in implementation of the Nuclear Waste Policy Act of 1982 (NWPA) and marked the beginning of the site characterization phase. Reaching this stage of determination permits us to proceed to investigate thoroughly, evaluate and compare geologic, environmental, transportation and safety factors at each of the three sites.

Prior to the nomination and recommendation of sites for characterization and through extensive field studies and analysis

of tens of thousands of pages of documentation, DOE determined that all of the 9 potentially acceptable sites formally identified in February 1983 were qualified for further study based on the siting guidelines developed and concurred in by the Nuclear Regulatory Commission (NRC).

The selection of sites for nomination and recommendation was borne out of an extensive technical effort through which draft environmental assessments were prepared on each of the 9 potentially acceptable sites to analyze and evaluate available data relevant to the suitability of sites. A subsequent analysis entitled, Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive Waste Repository -- A Decision-Aiding Methodology (DOE/RW-0074), was developed and finalized by DOE to aid in gaining insight into the attributes of the five nominated sites. The suitability and application of this methodology was reviewed and commented on by the National Academy of Sciences.

The decision-aiding methodology was a refinement of one of several methods proposed in the draft environmental assessments in 1984. It utilized the data and analyses in the environmental assessments in a decision process that allowed disaggregation of a complex set of objectives into component parts for evaluation and then reaggregation to determine both a composite ranking of the nominated sites and additional significant information relevant to determining an initial order of preference.

In addition, DOE considered the provisions in the siting guidelines for diversity of geohydrologic settings and diversity of rock types in arriving at a final order of preference. Based

on these considerations, the Secretary determined the set of three sites for recommendation as candidate sites for characterization, which he recommended to the President. In addition, pursuant to the requirements of Section 114(f) of the NWPA, the Secretary made a preliminary determination that those three sites are suitable for development as geologic repositories consistent with the siting guidelines.

NRC has subsequently provided comments on the site selections, but while numerous concerns have been identified by NRC staff relative to each site, their concerns are of the nature anticipated at any site for which the existing database is limited. Such concerns we believe can only be addressed through the characterization process which was wisely established by the NWPA.

The purpose of site characterization is to collect the extensive geologic and environmental data that are necessary to evaluate the suitability of a site for development as a repository; to develop site-specific designs both for a repository and for the waste package to be emplaced in the repository; to prepare an environmental impact statement; and to develop the information necessary for a construction authorization for a repository from NRC.

Site characterization will take five-to-seven years, depending on the site. It consists of surface-based field studies, construction of an exploratory shaft facility and the detailed tests conducted below surface in that facility.

Surface-based field studies will involve data collection activities, such as geologic mapping, seismic surveys and

hydrologic studies, as well as subsurface investigations conducted by deep and shallow boreholes that will be used for groundwater monitoring, core extraction, laboratory testing, and stratigraphic, tectonic, geochemical and geohydrologic studies.

Site characterization will also involve studies conducted in the candidate host rock in exploratory-shaft facilities. Exploratory shaft facilities provide access to detailed study of the potential host rock and will consist of:

(1) two exploratory shafts that will provide for access to the host rock, for the transport of people and equipment and for ventilation;

(2) underground testing areas; and,

(3) surface facilities needed to support construction and testing.

Exploratory shafts will be sunk to approximately the level where the underground facilities of a repository would be built -- 1,000 to 4,000 feet below surface depending on the site. At this level, the shafts will be connected to one another and to underground testing areas. The shafts and the underground testing areas will be used to conduct tests and make observations and measurements of site conditions. The surface-based tests will continue during the construction of exploratory shafts and will be continued in the exploratory shaft facility.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress

did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels.

The current activities at or related specifically to each of the candidate sites, include the following:

o At the Nevada site, land access is being pursued with other Federal agencies.

o At Washington, site plans are proceeding for hydrology tests that will precede exploratory shaft drilling.

o At the site in Texas, DOE is proceeding with its plans for obtaining access to the land, and has established an office of about 10 DOE and contractor personnel from our DOE Columbus, Ohio, Salt Office. Unlike the Nevada and Washington candidate sites, there has been no DOE office for this program located near the site or in the State.

Site Characterization Plans

Another major effort associated with site characterization is the preparation of a plan for characterizing each site. This plan--called a site characterization plan (SCP) is a major and intensive effort. The scope and magnitude of this effort can be gauged from the site-characterization plans now being prepared for publication: in each plan, the description of the characterization program alone covers several thousand pages.

Copies of each draft chapter are being shared with NRC, the States, and Indian Tribes as they become available.
The NWPA requires that such a plan for any candidate site be prepared, made available to the public, and that a public hearing be held by DOE in the vicinity of a candidate site before proceeding to sink the exploratory shafts at the site.

The SCPs are key documents and of major importance to States, Indian Tribes and the public -- as well as to NRC and to us.

The SCPs will provide a thorough status of what is known about the sites, describe the conceptual designs for the repository and waste package, identify necessary additional information requirements and present plans for obtaining all such information that is needed to support siting, licensing and design. The DOE is currently engaged in has an intensive effort of development and review of the SCPs for all three repository sites. This development is proceeding extremely well and is leading to extensive and high quality documents which carefully detail the logic for the data collection and evaluation procedures that will be needed to assure careful site characterization. The SCPs follow the Issues Hierarchy and issue resolution strategy approach briefly outlined in the Draft Mission Plan Amendment, (DOE/RW-0128), January, 1987, and covered in greater detail in the Issues Hierarchy, For A Mined Geologic Disposal System, (OGR/B-10), September 1986. The intensive effort underway will lead to issuance of the SCPs for the Nevada and Washington sites late this summer or early fall and for the Texas site early next year.

There is intense interest in the SCPs, because they will guide DOE during the site characterization phase until a license application is submitted to the Nuclear Regulatory Commission. The SCPs and periodic progress reports that DOE will be making, will have a crucial role in interactions with the NRC, and as vehicles for presenting information to the States, Indian Tribes, Congress, utilities and the public.

With regard to resolution of technical issues, the SCPs have been written using the SCP Annotated Outline (Annotated Outline for Site Characterization, Revision 1, OGR/B-5, March 1987) and the Issues Hierarchy in a manner to identify the issues and provide a rationale for their resolution. These issues are addressed in detail in the SCPs. While preparing the SCPs, DOE has met with NRC, States and Indian Tribes and reached agreement on the scope, content and approach being used for the SCP. In addition, a meeting was held with the NRC in May 1986, in which agreement was reached on the level of detail to provide in the SCPs.

To assure that critical issues are being addressed, a number of technical meetings with the NRC on selected topics have been held or are being planned for the near future. Meetings have been held with NRC, States and Indian Tribes to discuss the DOE Issues Hierarchy and performance allocation process, the geohydrology testing program for the Hanford site before construction of the exploratory shaft and proposed changes to the exploratory shaft facility at the Yucca Mountain site.

The technical issues raised by the NRC staff through their comments on the Environmental Assessments are being carefully and systematically considered by DOE in developing the issue resolution strategies contained in the SCPs.

Technical Issues raised by NRC

Resolution of specific technical issues raised by the NRC staff is expected to occur through a wide range of frequent interactions with NRC, the States and Indian Tribes. These will include review of Topical Study Plans, topical reports containing

site data and results of design and performance analyses, meetings on topical issues, on site observation of testing and technical coordinating group meetings. Semiannual progress reports will be used to keep the NRC staff and others informed as to the status of DOE plans and progress being made during site characterization, including progress toward resolution of technical issues, and will act as a directory to all the various technical reports which will be issued during site characterization.

After issuance, the SCPs, will be reviewed by the NRC staff, affected parties, and public hearings will be heldand comments requested. The NRC has also agreed informally to provide early comments of any exploratory-shaft related concerns and, finally, NRC will provide detailed analysis and comment in their Site Characterization Analysis report which will represent a comprehensive statement of the technical issues of concern to NRC. The DOE is committed to consider all comments received and issue a comment response document. DOE will report on its site characterization program through the semiannual progress reports. It is anticipated that meetings on difficult topical issues will be held frequently with NRC, States and Indian Tribes as data collection proceeds, and DOE expects that NRC will review and provide comments on topical reports and other material provided by DOE for technical meetings. DOE will consider all comments and will attempt to reach closure on technical issues throughout the period of site characterization. DOE will document closure on technical issues in the semiannual progress reports. DOE will assure that all interactions are of the highest technical quality

and that input from all technical experts is carefully evaluatedand that the public is kept informed of progress.

Interactions with Panels of the National Academy of Sciences

With regard to interactions with panels of the National Academy of Sciences (NAS) Board, the NAS Executive Commission recently approved a draft proposal to establish three site-specific panels to overview site characterization activities. DOE welcomes the opportunity to continue to receive the recommendations of the NAS. The DOE currently interacts with the NAS on topical issues, for example, The National Committee for Rock Mechanics, and will continue to encourage this interaction. We will be working closely with the NAS to assure that they have the information required to develop and implement their scope of work for their independent technical review. We will develop procedures in conjunction with the NAS that will assure that their appointed site-specific panels have timely and complete access to all plans and data available. We will also provide for routine meetings and briefings as requested by NAS on individual site-specific topical issues. NAS panel comments will be fully addressed as site characterization activities proceed.

Technical Excellence

Assuring technical excellence during all aspects of the site characterization process is the central focus of DOE's efforts. DOE is preparing the SCPs using state-of-the art procedures, such as the Issues Hierarchy and performance allocation process, and issues resolution strategy. The SCPs are being prepared by technical experts who are being required to think through the

complete rationale for the process leading to the need for specific data. These project offices plans are being reviewed by a major DOE headquarters task force and by independent peer reviewers under a formal quality assurance process to assure the technical integrity of the test program. As discussed, these plans will undergo very external review by NRC, affected parties and others, and their comments will be evaluated and incorporated as appropriate.

The DOE plans to maintain this high level of review throughout the completion of study plans, test procedures, semiannual progress reports and laboratory, field and design activities. The procedures, summarized earlier, that we are putting in place, which include independent peer reviews within DOE, external peer reviews by NAS and frequent and extensive interaction with NRC, the States and Indian Tribes through meetings, technical coordinating groups and hearings, assure the technical excellence of the program through each step of the process. We are confident that the process we have in place will lead to the highest quality site characterization effort possible.

Mr. Chairman, this concludes my remarks. I would be happy to try to answer any specific questions you or members of the Subcommittee may have at this time.

##########

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

APRIL 29, 1987

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the Department of Energy's (DOE) proposal for Monitored Retrievable Storage (MRS).

In our proposal, we recommend that Congress:

- Approve the construction of an MRS facility at Clinch River near Oak Ridge, Tennessee;
- Limit the storage capacity at the MRS facility to 15,000 metric tons of spent fuel;
- Preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the NRC;
- Direct DOE to implement measures responsive to the concerns and recommendations of the State and local governments; and
- Direct DOE to implement the program plan accompanying the proposal.

Before addressing several of the salient issues surrounding this proposal, I would like to provide relevant background information.

BACKGROUND

Section 141 of the Nuclear Waste Policy Act of 1982 (NWPA) directs DOE to complete a detailed study of the need for and feasibility of, and to submit to Congress a proposal for, the construction of one or more MRS facilities for spent nuclear fuel and high-level radioactive waste.

76-701 0 - 87 - 3

In addition, section 220 of the NWPA requires DOE to submit to Congress a report describing the research and development activities the Secretary considers necessary to develop the proposal required in section 141. The NWPA required that this report be submitted to Congress not later than 6 months after the date of enactment of the NWPA. In June 1983, DOE submitted this report to Congress, which concluded that the MRS proposal could be prepared using currently mature engineering and design practices without additional research and development.

In December 1984, DOE initiated efforts to examine MRS as an option for storage of spent fuel. DOE considered a variety of alternative system configurations and focused on three in detail. These configurations were:

(1) a deep geologic repository only, without an MRS facility;

(2) a repository with an integral MRS facility; and,

(3) a repository with a backup MRS facility.

DOE concluded that an MRS facility, as an integral part of the nuclear waste management system, would significantly improve system operations and the timely deployment of key systems functions. This approach is significantly different from the concept of the MRS as a backup facility. An MRS facility as part of an integrated system could perform spent fuel preparation and packaging functions at a central location before shipment to a repository for permanent disposal. Performance of these functions at an MRS facility centrally located to the majority of the commercial generators of spent fuel could contribute significantly to overall systems efficiency and timeliness while

reducing the total shipment miles. The east-central or southeastern part of the country is central to the majority of nuclear generators and, therefore, the area in which possible candidate sites could be considered.

At approximately the same time, DOE also began its process of screening to identify candidate sites for the proposed MRS facility. This process began with the knowledge of the one major difference between MRS facilities and deep, geologic repositories: MRS facilities, unlike deep, geologic repositories, would be surface facilities and would depend on engineered systems and equipment for the containment of the radioactive material. This makes the safety of such a facility largely independent of the natural characteristics of a site. Thus, suitable MRS sites could be found throughout the country.

As a result, DOE considered factors other than geology in screening these numerous possible sites. These factors, in order of their consideration in screening, were:

(1) location to minimize total shipment miles;

(2) ability to judge the suitability of the site for development of a nuclear facility;

(3) sufficient available acreage;

(4) potential to compete with known land use, environmental or other public objectives; and,

(5) sites at which an MRS facility could be most successfully constructed.

In the first level of screening, DOE sought to identify the geographic region within which location of an MRS facility would minimize total shipment-miles for spent fuel transported through

the MRS to a repository. DOE concluded that siting an MRS facility in the East Central region of the United States would lower total shipment-miles to and from the MRS facility to within 20% of the lowest achievable and was preferable under the numerous system logistics options considered by DOE.

Within the East Central region, DOE applied its next two screening factors, the ability to judge the suitability of the site for development of a nuclear facility and suitable acreage. DOE chose to consider those sites within the preferred region, which were either sites docketed with the Nuclear Regulatory Commission (NRC) for development of production and utilization facilities, or lands owned by DOE and used for nuclear activities. The rational for using this selection factor was the very high quality of publicly available data on the suitability of these sites for nuclear development.

Using searches of public literature, searches of the NRC public document room, and professional knowledge of individual sites, DOE identified 37 sites, 6 owned by DOE and 31 docketed with NRC within the preferred region. These 37 sites were located in 12 different states.

DOE next applied the requirement that the site have 1100 acres available on which to construct and operate an MRS. This factor reduced the number of potential sites to 11 sites in 6 states.

The 11 sites were further evaluated, drawing on materials available from public sources. DOE considered eight factors which affected a site's potential for development of an MRS facility:

(1) ease of regulatory compliance;

(2) existing environmental setting;

(3) geotechnical site considerations;

(4) socioeconomic setting;

(5) institutional and administrative structure of the state;

(6) local and regional transportation characteristics;

(7) access to physical infrastructure; and,

(8) capital cost of construction.

Based on this information, in April 1985, DOE issued two reports documenting its analyses and identified three candidate sites expected to be included in the proposal to Congress. The reports are entitled:

- The Need for and Feasibility of Monitored Retrievable Storage: A Preliminary Analysis;
- Screening and Identification of Sites For a Proposed Monitored Retrievable Storage Facility;

The three sites identified are in Tennessee: The Clinch River Breeder Reactor site, owned by the Tennessee Valley Authority, as the preferred site; the DOE Oak Ridge Reservation; and the Hartsville Nuclear Plant site.

In December 1985, a draft proposal, including an environmental assessment and a program plan, was prepared for submittal to Congress early in 1986. Copies of the draft proposal were sent to the Environmental Protection Agency (EPA) and NRC for comment, as specified in the NWPA. Concurrently, copies were also provided to the State of Tennessee for comment.

TRANSMITTAL OF THE PROPOSAL

The Department had intended to submit the proposal in February 1986, but was enjoined from doing so by the U.S. District Court for the Middle District of Tennessee in litigation filed by the State of Tennessee. The Department subsequently appealed and received a favorable decision from the U.S. Court of Appeals for the Sixth Circuit overturning the injunction. That decision, in turn, was appealed to the U.S. Supreme Court by the State of Tennessee. The Supreme Court denied certiorari and the Department, having overcome these legal impediments, formally submitted the proposal to Congress on March 31, 1987.

The proposal consists of 3 volumes and, in accordance with the NWPA, it includes the proposal itself (Volume I); an environmental assessment (Volume 2) that examines the three alternative sites and six site-and-design combinations; and, a program plan (Volume 3) that includes plans for funding and for integrating the MRS facility into DOE's waste management system. Site-specific designs, specifications and cost estimates are included by reference in Volumes 2 and 3. Also provided are comments by NRC and EPA. Formal comments from the State of Tennessee, indicating former Governor Alexander's general opposition to the MRS, were received by DOE and were included. In addition, Governor McWherter's position on DOE's proposal, that reaffirms former Governor Alexander's opposition, were also included.

Included in the State of Tennessee comments are those from the Clinch River MRS Task Force of local officials and citizens from the City of Oak Ridge and from Roane County, Tennessee.

This Task Force endorsed the proposal for location of the MRS at the preferred site provided the proposal met certain conditions that the Department believes it has met. Subsequent to the preparation of the proposal and receipt of the State of Tennessee comments, the Department received a report from officials within Morgan County, Tennessee who had studied the prospect of locating the MRS in Morgan County and concluded that Morgan County should be the preferred site for the MRS. The Morgan County report and its recommendations and proposal to the Department are also enclosed for consideration by the Congress. Comprehensive environmental and other site-specific studies would be required to evaluate the Morgan County sites.

Since the MRS proposal was prepared over a year ago, the Department has revised its estimate of when the first geologic repository can be operational from 1998 to 2003, as presented in the January 1987 draft Amendment to the June 1985 Mission Plan. The MRS will allow the Department to begin receiving waste by 1998. Regarding the draft Amendment, Volume 1 (The Proposal) and Volume 3 (The Program Plan) of the MRS proposal submission have been updated to reflect the impact of proposed programmatic and technical data base changes that have been developed by the Department since the proposal was originally prepared. In addition, a summary analysis of the effects of the above changes on Volume 2 (The Environmental Assessment) is included with that volume. The revised volumes and the summary analysis were also reviewed with EPA and NRC staff.

SAFETY DOES NOT APPEAR TO BE AN ISSUE

The MRS uses technology and techniques for remote handling or radioactive spent fuel which DOE and the nuclear industry all over the world have been using safely for many years. In our transmittal of the MRS proposal to Congress, we included comments by NRC, EPA and the State of Tennessee, also concluding that the facility can be safely constructed and operated.

NRC AND EPA COMMENTS

The NRC limited its comments to its role as a regulatory agency and include the following:

"Siting - The preferred site identified by DOE for the MRS is the site of the former Clinch River Breeder Reactor Plant, which has already been shown to be a qualified site from the standpoint of public health and safety for a nuclear power plant. Moreover, based on present information, the staff knows of no information which would disqualify the alternate sites. DOE, however, has recognized the need for further investigations and evaluation of the designated site as related to the particular characteristics of the MRS design."

"Design - The MRS conceptual design appears reasonable from the standpoint of public health and safety. Although an in-depth review would be required before the facility could be licensed, it appears from the conceptual design that each requirement in 10 CFR Part 72 can be met."

"Cask Certification - DOE must design a safe and reliable transport system, including durable transport equipment. You have indicated that transport casks developed under NWPA for transporting commercial spent fuel to a repository will be certified by NRC. Based on experience to date, spent fuel can be moved safely in NRC-certified casks."

"Demonstration of Consolidation - The consolidation of spent fuel needs to be adequately demonstrated to assure that this operation can be performed on the production-scale contemplated for the MRS. To date, a few spent fuel assemblies have been taken apart and the rods consolidated, and a significant number of fuel assemblies have been reconstituted (i.e., the rods have been removed and replaced within assemblies). In this sense, the consolidation process is feasible. You have indicated in the Design Verification Plan (Appendix C to the Program Plan) your intent to test and demonstrate disassembly/consolidation equipment, principally at the Idaho National Engineering Laboratory."

"Safeguards - The NRC staff's analysis of the MRS safeguards provisions at the conceptual design stage indicates that all NRC safeguards requirements can be met."

The Department sees nothing in the additional information or staff report detailing its evaluation to indicate that the MRS could not be built in a safe, environmentally sound and timely manner.

The EPA concurred "... that spent fuel and high-level wastes (HLW) can be safely and economically stored in dry storage facilities without significant degradation of the stored materials or risks to the public and the environment...." EPA also stated that "The EA and supporting documentation is adequate in explaining the need and advantages of the MRS as an integral part of the total nuclear waste management system."

Based on their review of the environmental assessment and the accompanying technical documentation, EPA concurred with DOE's recommendation to construct an MRS facility as an important element of the nuclear waste system. EPA further concluded that MRS construction could be accomplished within acceptable regulatory and environmental standards. This determination, however, is subject to EPA review and comment on the Environmental Impact Statement required for construction and licensing (and the subsequent applicable environmental permitting), which will be prepared under the National Environmental Policy Act if an MRS is approved by Congress.

STATE OF TENNESSEE COMMENTS

A few of former Governor Alexander's comments are also worth noting on the point of safety:

" 'MRS' is a REPACKAGING PLANT -- The government has given the plant a ridiculous name (Monitored Retrievable Storage Facility) that confuses almost everyone, and nuclear power opponents have given it an undeserved reputation that scares almost everyone."

"THE REPACKING PLANT CAN BE OPERATED SAFELY -- That, of course, depends upon the U.S. Government's competence as a

manager and regulator. But it is the same material being used everyday to make electricity. It will be carried in containers that have never broken, even when test-crashed at 100 miles per hour. The fuel cannot explode and cannot be made into a bomb. More than ninety percent of it will be carried by train, not on highways. The task force of citizens and experts from Oak Ridge and Roane County also conclude that it can be designed and operated safety."

THE CLINCH RIVER SITE

In the proposal to Congress, DOE identified the Clinch River Breeder Reactor site, owned by the Tennessee Valley Authority, as the preferred site. It has several particularly desirable features including: 1) Federal ownership and control by DOE; 2) particularly good transportation access (five miles to the nearest interstate highway and direct rail access); 3) site characteristics and current data judged by the NRC in 1983 as sufficient for granting a limited work authorization for the now cancelled breeder reactor; and 4) a technical community in the vicinity of the site which can provide experienced nuclear facility support functions.

Building the MRS on a technically acceptable site is of prime importance. Because NRC has already determined the Clinch River Breeder Reactor site to be acceptable for a nuclear power reactor, DOE believes there is very high confidence that NRC would find the site acceptable for the MRS, although there are many alternative sites for an MRS. Rather than dwelling on the many good technical merits of the Clinch River site, I would

like to address further the non-technical but nonetheless important merits of the Oak Ridge - Roane County community as host for the MRS.

The Oak Ridge - Roane County community is perhaps a unique community in that it has a significant amount of background and experience in (1) working with DOE, (2) understanding and working with nuclear facilities, and (3) having a citizenship which is willing to volunteer its time and effort to work on issues of importance to the local community to ensure that its interests are protected.

The Clinch River MRS Task Force, which was a volunteer citizen group, did remarkable work in assessing the safety of the MRS and in developing conditions and suggested mitigation approaches which would make the MRS acceptable to the Oak Ridge - Roane County community. A measure of the success of this Task Force is the fact that both the Oak Ridge City Council and the Roane County Commission voted unanimously to accept the Task Force results, and would accept the MRS if DOE and the Congress met the conditions developed by the Task Force.

An analysis of the work of this citizen task force is contained in a paper prepared by E. Peelle of the Oak Ridge National Laboratory for the Waste Management '87 conference. I have attached that paper to my testimony (Attachment A) for your information. I believe that it describes fairly a working relationship which could serve as a model for the waste program to use in all of our State, Tribal and local government relationships.

COST OF THE MRS

The expenditures for the MRS program from the time of Congressional approval until the facility becomes operational are estimated at approximately $907 million, of which approximately $710 million would be for construction. The annual operating costs for the facility, which would employ about 600, would be approximately $73 million, not including financial assistance and tax-equivalence payments. The estimates are higher for the initial years of operation, when up to 1600 sealed storage casks must be fabricated, and lower in later years, when the MRS facility stops receiving spent fuel and is only shipping spent fuel in canisters to the repository. Decommissioning would cost approximately $83 million. These add up to a total development, construction, operation and decommissioning cost of about $3 billion.

The net cost to the total system is about $1.5 billion because of savings incurred at the repository and in the transportation system. The costs borne by the utility rate payers would be offset by savings in at-reactor storage cost; these costs would be avoided because an MRS facility would allow DOE to accept spent fuel at an earlier time. Under certain circumstances, it is possible that the addition of an MRS facility would result in a cost saving to the overall system. For example, an MRS facility consistent with the draft Mission Plan Amendment is estimated to eliminate the need for additional storage capability at more than 15 reactor sites and could offset more than 10,000 metric tons of at-reactor storage. This would result in a savings of as much as $1 billion at the reactor

sites. The financial costs of adding an MRS facility are small in comparison with the benefits.

It is estimated that it will take 10 years from the time of Congressional approval to completion of construction of an MRS. Table 1 provides a timeline of the major milestones and program elements involved in the MRS deployment schedule.

Should Congress authorize an MRS facility, we are committed to seeking within 60 days to enter into a formal Consultation and Cooperation Agreement with the host State.

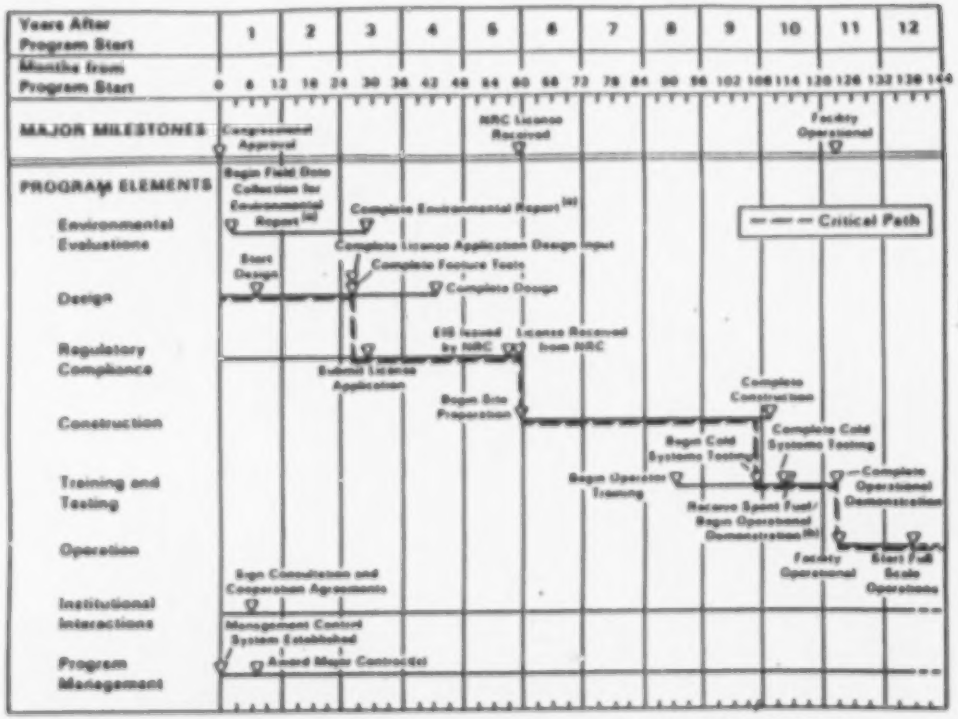
The FY 1988 funding estimate of $58 million for the MRS program assumes Congressional approval to proceed with activities that are critical to the deployment of an MRS facility.

COMPARING SYSTEMS WITH AND WITHOUT AN MRS

In considering whether to approve an MRS, it is reasonable to ask what it buys relative to a system without an MRS. I would like to address this question relative to several of the MRS benefits described in our proposal.

System Development:

One benefit that we consider to be particularly important, is how the MRS can contribute to implementation of the entire system. Inclusion of an MRS in the waste management system provides a stepwise approach to moving from the current state of experience to full scale operation of a disposal system including a repository. Those who compare already deployed MRS and no-MRS system tend to overlook the importance of proceeding with an MRS as a step to a repository.



[a] The precise nature of this document will be dependent on the provisions of any authorizing legislation.

[b] The shipment of spent fuel to the MRS facility is contingent upon receipt of a construction authorization for the first repository. The revised schedule for the first repository in the Draft Mission Plan Amendment contemplates receipt of such authorization by the first quarter of 1998.

TABLE 1 - MRS Deployment Schedule

At-Reactor Storage and Consolidation:

Without an MRS facility, up to 13,500 metric tons of new temporary storage capacity would be needed at about 45 reactors by the year 2003, when the repository would start operating. New temporary storage capacity will have to be provided at some reactor sites in any event, but to a far smaller degree with an MRS facility added to the system. The necessary incremental storage can be provided at the MRS facility more efficiently and at less cost, mainly because a single facility specifically designed and licensed for that purpose would be used instead of many separately designed and licensed independent installations.

The MRS facility could allow DOE to begin receiving waste for disposal in 1998, and the waste-acceptance rates of the waste-management system would start exceeding reactor-discharge rates 8 years earlier than would otherwise be possible.

Without an MRS, utilities will have to add significantly more new storage capacity. They are capable of doing this through such means as metal storage casks, concrete storage modules and rod consolidation. DOE has worked very hard to develop and demonstrate these technologies to help utilities "get by" until the Federal system begins operating to accept waste. Through cooperative programs with utilities, two dry storage facilities have been licensed by NRC.

Some have suggested, however, that because utilities can add storage capacity and can consolidate fuel, an MRS is not needed. The ability of utilities to add storage capacity is not an issue, and the MRS is not proposed with the primary objective of reducing the utility storage burden. Rather, reducing that

burden is a very significant, but secondary, benefit associated with early implementation of the Federal disposal system that is permitted by the MRS and that makes the MRS all the more attractive.

On the consolidation question, I wish to point out that the results of consolidation at reactor sites and consolidation at an MRS are not comparable. This is shown in Attachment B. In order to create more storage capacity, some utilities are considering consolidating two assemblies into one square canister that will fit back into the original storage rack.

In contrast, rods from as many as twelve PWR or thirty BWR assemblies could be consolidated in round canisters at the MRS or the repository. The canisters would be sealed, free of surface contamination and specifically designed for the repository disposal package. Thus, consolidation and packaging operations at reactor sites should not be compared to those same operations at an MRS (or the repository). In addition, the packaging functions at the MRS facility (or the repository), in contrast to reactor storage basins, would be designed, built, licensed and operated specifically for this purpose -- optimizing the consolidation and packaging operation by minimizing the handling and movement of the spent fuel. Considering that several hundreds of thousands of assemblies will be consolidated and packaged, the DOE believes it is important that it be done with equipment and facilities dedicated to that objective, as opposed to it being an adjunct operation at over 100 different reactor sites not currently licensed for such a production operation.

The NWPA finds that "a national problem has been created by the accumulation of spent fuel from nuclear reactors" and that the "Federal Government has the responsibility to provide for the permanent disposal". Adding additional operator burdens and complexity at the reactor sites would be inconsistent with these findings which serve as a basis for the NWPA.

Foreign experience further reinforces the Department's belief that existing reactor activities is not warranted. For example, both West Germany and Sweden are minimizing the role of the operating reactors in spent fuel management and disposal, in order to allow the reactors to concentrate their efforts on the safe and efficient operation of the reactor facility. While no two programs are precisely comparable, the West Germans and the Swedes have established a Federal Disposal System with interim storage facilities and permanent disposal in geologic media.

Transportation:

Some improvements in the transportation system should be pursued -- with or without an MRS. For example, increasing cask capacities can reduce the number of shipments; this is being pursued independent of the MRS decision. Increasing the number of reactors that can ship by rail can also yield improvements; this is also is being pursued independent of the MRS.

Other suggested improvements include using reactor sites to marshal multi-cask shipments, performing inter-modal (truck to rail) transfers, use of multi-cask shipments for truck and rail, use of extra large casks (both truck and rail), and use of truck convoying techniques. The conditions under which these

techniques are feasible, or even desirable, however, are highly uncertain.

In any event, their only effect on the MRS proposal is to potentially lessen, but not eliminate, some of the transportation system benefits offered by the MRS. Further, they would not help achieve early, route-specific planning efforts that can begin as soon as an MRS site is selected. These include detailed planning with States, Tribes and utilities on such matters as route designation, pre-notification, emergency response, and equipment procurements.

Without an MRS, there are considerable limits as to what can be achieved until a repository site is selected (in 1994, according to the draft Mission Plan Amendment). This illustrates further how an MRS can help resolve issues and make progress earlier, thereby contributing to overall system development.

Cost of an MRS

DOE has projected the MRS would add $1.5 billion, approximately 5% to the costs for the Nuclear Waste Fund portion of the total waste system costs. But the $1.5 billion will be offset by savings in at-reactor storage costs (which are separate from the Nuclear Waste Fund) resulting in utility savings of up to $1 billion. Even without those savings, however, we maintain that what you buy for this 5% is well worth the costs and that in the long run, the MRS may very well result in substantial cost savings that we just aren't able to quantify today.

INTERACTIONS WITH TENNESSEE

In April 1985, when DOE announced the identification of three candidate sites for study for the MRS proposal, DOE notified the Governor by telephone and letter.

At the time of the announcement, the Department published a draft Need & Feasibility Analysis for public comment and requested that the public provide any available environmental information regarding the candidate sites. A number of comment letters were received and responded to by the Department.

To support State participation in the MRS program activities and review of the proposal before Congress, a grant of $1.4 million was provided to the State of Tennessee in July 1985. The State in turn made monies available to the relevant local governments.

Copies of the designs and cost estimates were made available to the State as they were completed. The need and feasibility, and environmental analyses were developed in conjunction with review and comment from the State of Tennessee and the relevant local governments. Three meetings were held in 1985 with State officials on the development of the environmental assessment. In response to a request from Tennessee officials, a preliminary version of the MRS environmental assessment was provided to Tennessee State and local officials, NRC, and EPA in November 1985. Feedback was received and accommodated into the three volume review copy of the proposal and supporting documents published in December 1985. The December 1985 review copy was used for the official review of EPA and NRC as required under the Act. The Department also requested, in recognition of their

concerns as the potential host state, that Tennessee review the documents.

Department officials have participated in 87 workshops, briefings and public meetings concerning or touching on the MRS program from April 1985 to March 1987. Twenty of these were with State officials. Fifteen meetings were with local government officials. Three were travel briefings to acquaint State and local officials with similar government facilities in Idaho, Nevada, and New Mexico. The remainder of the meetings were held by various groups interested in the MRS.

The Clinch River MRS Task Force, a group chartered by the City of Oak Ridge and by Roane County, provided a detailed report to the Department in October 1985. This report and letters received from the State provided specific suggestions for improvements in documents organization, preparation, and local conditions for facility acceptability.

Many of the concerns expressed by the State and local governments are reflected in the final documents. For example, in direct response to State and local concerns, DOE incorporated the following into the MRS proposal: a 15,000 MTU limit on the amount of spent fuel to be stored at the MRS; that the repository receive a construction license prior to operation of the MRS; incorporation of the need and feasibility analysis into the environmental assessment; a request that Congress authorize mitigation payments for the MRS from start of construction, and, tax equivalency payments starting with operation of the facility.

CONCLUSION

I urge the Congress to authorize the MRS so that we can proceed with the development of the Nation's integrated waste disposal system in the most effective manner possible.

This concludes my remarks. I would be happy to address any questions you may have.

##########

ATTACHMENT A

THE MRS TASK FORCE: ECONOMIC AND NON-ECONOMIC INCENTIVES FOR LOCAL PUBLIC ACCEPTANCE OF A PROPOSED NUCLEAR WASTE PACKAGING AND STORAGE FACILITY

Elizabeth Peelle
Energy Division
Oak Ridge National Laboratory*
Oak Ridge, Tennessee 37831

WASTE MANAGEMENT '87
University of Arizona
Tucson, Arizona

March 4, 1987

"The submitted manuscript has been authored by a contractor of the U.S. Government under contract No. DE-AC05-84OR21400. Accordingly, the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes."

*Operated by Martin Marietta Energy Systems, Inc., under Contract number DE-AC05-84OR21400 with the U.S. Department of Energy.

THE MRS TASK FORCE: ECONOMIC AND NON-ECONOMIC INCENTIVES FOR LOCAL PUBLIC ACCEPTANCE OF A PROPOSED NUCLEAR WASTE PACKAGING AND STORAGE FACILITY

E. Peelle
Oak Ridge National Laboratory*
Oak Ridge, Tennessee 37831

ABSTRACT

A joint Oak Ridge-Roane County citizen task force (TF) evaluated the Department of Energy's (DOE) proposal to site a Monitored Retrievable Storage facility in Tennessee in terms of environmental, transportation and socio-economic impacts. The case study examines how the TF used mitigation, compensation, and incentives (economic and non-economic) to address the problem of distrust of DOE and to change the net local impact balance from negative to positive. Intensive group interaction during their investigations and development of trust within the TF led to consensus decisions on safety and conditional acceptance. DOE accepted most of the TF conditions after informal negotiations. The siting process was stopped by extensive state-wide opposition resulting in legal challenge by the state and vetoes by the governor and state legislature.

INTRODUCTION AND OVERVIEW

The innovative institutional arrangements and possibilities for state and local benefits permitted in the Nuclear Waste Policy Act of 1982 (NWPA) have never been fully implemented. This paper presents one example of an effort to site a high level waste facility which opened new ground in public acceptance through citizen evaluation and mechanisms to deal with unacceptable impacts. We describe a case study of a local siting process including negotiation between a potential host area and the Department of Energy (DOE) over a proposed Monitored Retrievable Storage (MRS) facility in the Roane County portion of Oak Ridge, Tennessee in 1985-1986.

The study focuses upon the intensive process by which a local task force (TF) made the decision about safety, evaluated impacts upon the city and county, and specified conditions needed to change the net benefit balance from negative to positive. Unprecedented positive relationships with the local DOE office permitted productive (though uncompleted) negotiations over the conditions which the TF felt were necessary for local acceptance. The effects of participation upon the TF as well as the DOE response to the TF proposals for conditional acceptance of the MRS are examined.

But local acceptance does not a siting make; widespread public and political opposition to the proposed siting developed quickly in the rest of the state, leading to eventual rejection of the MRS proposal by the governor and legislature of Tennessee prior to submission of the MRS proposal to congress. The favorable local climate contrasted with negative reactions to the MRS and the TF report outside the local area. This is a brief version of a longer study and concentrates upon findings and conclusions. For more details and analysis, see the full case study (1). Other perspectives on the MRS siting and its significance include King (2), and Sigmon (3).

The effort to site the MRS is, of course, related to the intense national NIMBY situation with permanent geological repositories. Vigorous efforts by half the states seek to avoid selection, as DOE attempts to fulfill NWPA mandates and site one or two high level nuclear waste repositories. The MRS episode is incomplete, halted by maneuvering over the DOE postponement of second round repository siting efforts. Arguments over the need for the MRS and whether it is a disguised substitute for a repository continue unabated.

As proposed by the DOE in early 1985, a Monitored Retrievable Storage facility would be an integral part

*Operated by Martin Marietta Energy Systems, Inc., under Contract number DE-AC05-84OR21400 with the U.S. Department of Energy.

of the national radioactive waste management and disposal system. An MRS would receive, repackage, consolidate and temporarily store spent fuel from civilian reactors prior to shipment to a permanent repository, introducing desired flexibility into the waste management system (4).

OVERVIEW OF TASK FORCE ACTIVITIES

The MRS Task Force was a citizen evaluation group jointly appointed by the City of Oak Ridge and Roane County in Tennessee. Members included local political and community leaders and both technical (including three technical "insiders" with specific rad waste and transportation expertise) and non-technical citizens. Funded for $100,000 by DOE through the State of Tennessee, the task force (TF) organized itself into three study groups--environmental, transportation, and socioeconomic--and undertook an intensive three-month evaluation of the proposed MRS and its impacts upon the local area. Restricting itself to local concerns and impacts, the TF did not consider the question of need for the MRS (5) which was roundly debated everywhere else in the state. The task force concluded that as another unwanted federal project, an MRS would have unacceptable impacts, but that these might be made acceptable if DOE and Congress would agree to numerous conditions designed to mitigate impacts and compensate and reward the area for the role of host. The TF report was unanimously adopted by both local governments and aggressively communicated to political leaders at the state and national level.

Important characteristics of the TF process included open meetings with minutes widely distributed to any who requested. Intense discussion and questioning by both the technical and non-technical members left few questions unasked and were the key to the consensus achieved by the TF. They focused first upon the safety and then the acceptability of MRS operational and transportation impacts upon the social and economic structures of the city and county. Their strategy was to develop conditions under which an MRS would be acceptable, by mitigating and compensating all negative impacts until the benefit balance was positive. DOE was open, responsive and interactive, which led to continuing informal negotiation between DOE and the TF.

SAFETY CONSENSUS DEVELOPED FROM GROUP PROCESS

The task force viewed safety as a non-negotiable precondition to any other arrangements or agreements on the MRS. Two of the TF subgroups were given responsibility for making the judgment on safety (environmental and transportation groups) while the third (socioeconomic) dealt with possible socioeconomic impacts and the conditions that would mitigate or compensate such impacts. The open and intensive questioning by all members and investigations undertaken by the TF strongly influenced group thinking and development of a group consensus. Trips by TF to DOE labs and host areas were highly influential in the decision that the MRS technology could be operated safely. TF concerns thus were focused toward institutional uncertainties and management inflexibility which might affect safe operation of the MRS over its lifetime. The TF wanted guarantees of DOE and government accountability over the long haul. They developed several independent safety-related conditions involving local input and control. The group process thus changed the initial skepticism or opposition of some members by raising questions in a no-holds-barred manner, by aggressively seeking information, formulating questions and evaluating answers, and dealing with concerns in an open manner. Interaction and the development of trust between technical and non-technical members (roughly half each)was particularly important in enabling non-technical members to make the decision on safety. Actuarial assessments of risk or quantative risk assessment thus played a minimal role in the final consensus about safety.

DEALING WITH DISTRUST OF DOE AND GOVERNMENTS

One of the TF's major concerns was how to deal with distrust of DOE, viewed as a principal major impediment to acceptance of the proposed facility. Since media revelations about extensive past pollution of the DOE reservation and DOE's past record of indifference to local concerns were part of the local context, the TF sought to build local trust through performance requirements upon DOE. This included tying the MRS schedule to cleanup of the DOE reservation. Since the long-term reliability and interest of other federal and state agencies was also in doubt, the TF devised various local control measures to assure that those most concerned with the continuing viability of MRS arrangements would be directly responsible for them. These guarantees and safeguards included the citizen oversight board with citizen input to performance standards for the facility and power to shut down the facility if these were violated. In its report (6), the TF also asked Congress to specify how DOE would comply with TF recommendations.

The TF also asked for DOE assistance to help change adverse public perceptions of Oak Ridge as an "environmental disaster" caused by negative publicity about DOE's past record. This included funds for public information about the MRS' true role (not a nuclear dump), DOE's progress in reservation cleanup, and the nature of other DOE activities in Oak Ridge.

TASK FORCE CONDITIONS FOR MRS SITING

The numerous conditions placed upon MRS acceptance by the task force entailed both economic and non-economic conditions, including all the standard socioeconomic mitigations mentioned by the NWPA but going well beyond these (6). Most of the TF's attention was focused upon non-standard impacts of long term management and accountability. Economic mitigations and compensations included tax equivalency of the facility as if it were privately owned from time of authorization (not just construction), property value insurance for homeowners living close to the site, railway and highway upgrading, replacement of the CRBR (MRS) site by an equivalent industrial site, and compensation for loss of industrial diversification possibilities, among others. Equally important to the TF were the non-economic conditions such as additional [illegible]dent safety requirments, local control [illegible] as a citizen oversight board and local env[illegible] monitoring, assurances that the MRS would [illegible]me a de-facto permanent repository in the event [illegible]elays in licensing a geological underground repository, and measures to rebuild trust in the performance and trustworthiness of DOE. These and other major incentives and compensations are listed in Table I in the next section along with the DOE response to the TF conditions.

DOE INTERACTIONS WITH TASK FORCE AND RESPONSE TO TF REPORT

Task force members expressed surprise over DOE's responsiveness to TF questions and interests, since this was unlike past local dealings with DOE. But, DOE officials early and repeatedly said they would agree to tax equivalency payments and deal constructively with TF concerns. TF members retained a certain skepticism,

however, waiting to see how lasting the DOE attitude change would be and how verbal commitments would be translated into guaranteed arrangements. Extensive personal contact and active discussion between the new local MRS office and TF members developed into an informal negotiation process. The MRS manager forthrightly discussed DOE's problems and limitations in responding to TF ideas and requests. In interactive and informal fashion, the TF proposal as well as DOE responses were shaped. Thus, there were no surprises in the TF recommendations and conditions.

The acid test would be DOE's formal response to the TF report, in the TF's view. A draft of this proposal was reviewed by the TF before formal submission to Congress. It revealed DOE's acceptance in some form of most of the major conditions of the TF (7). Significant differences between the two involved the composition and power of the citizen review board, property value insurance and a linkage of DOE reservation clean up schedules with MRS construction schedules. Significant agreements included tax equivalency payments beginning with authorization of the MRS, the transportation mitigations, limiting MRS storage capacity, and precluding acceptance of any waste by the MRS prior to NRC construction authorization for the first repository. Many DOE proposals, however, require state agreement for full implementation. This concerned local leaders who do not share DOE's assumption that vital local conditions will be adequately fulfilled through a consultation and cooperation (C&C) agreement between the state and DOE. A comparison of TF conditions and DOE responses is shown in Table I.

This iterative negotiation process ceased in January, 1986, when legal action by the state of Tennessee enjoined DOE from presenting the MRS proposal to Congress until the adequacy of DOE's siting process is reviewed.

FINDINGS

Effect of Participation Upon Task Force Members

The effect of the intensive participation and study upon members included changing the opinions of a significant fraction of TF members, developing a sense pride about their participation and achievements, and achieving consensus not only about safety but also about the conditions of acceptability of the proposed MRS facility. The TF developed its own identity, assuming a life of its own independent of its creators. Initial opinions of those interviewed (13 of 31) about the safety and feasibility of the MRS fell into roughly equal groups of opponents (4), proponents (4) and skeptics or undecided (4). In the end, all voted to approve the report and said their concerns about safety had been resolved. Six months later, one initial opponent would now vote "no," because of recurring doubts about DOE's ability to fulfill its commitments.

Operation of the Task Force

- A citizen task force can be a successful mechanism for lay people to evaluate information and reach local consensus on safety and acceptability of a complex proposed facility. It is an alternative to the increasing but unsatisfactory reliance upon advocacy science.
- A citizen task force is expensive in time, resources and skills requirements. It requires citizen commitment, intensive interaction, and staff support.
- Developer (DOE) funds were critical to task force operation. Though TF members were all volunteers, they could not have completed this demanding operation without in-depth staff and administrative support and travel funds.
- The intensive nature of TF operations was vital to the outcome. A more relaxed operation might not have developed the consensus and group identity needed.

Relations with DOE

- The informal negotiation process throughout the life of the TF led to the development of many conditions acceptable to both sides.
- The task force and the city negotiated the nature of the TF relationship with DOE as well as the specific conditions.
- Task force conditions aimed at changing the institutional relationship between DOE and local governments.
- A basic problem inhibiting completion of negotiations is already apparent: DOE's inability to commit future congresses or other parts of DOE, or to execute direct contracts with local governments.

Siting Process

- Standard socioeconomic impact analysis was irrelevant to the major concerns of the TF which were mostly non-standard assessment issues such as long term management and accountability.
- Legitimacy of a local task force can be enhanced by inclusion of interest group representatives, balanced composition between technical and non-technical members, restraint in use of technical insiders, restricting advance pro or con statements by local authorities or others, and avoiding use of the TF in a promotional role.
- Making the decision on safety requires a minimum level of trust to permit agreement on usable information and thus, to enable negotiation.
- Transferable components of this experience may include the TF's condition strategy, the extra safety measures, some of the process components and the handling of distrust of DOE. Unique aspects and resources of the Oak Ridge area which may limit transferability are a generally supportive local climate, familiarity with large federal nuclear projects, availability of in-house technical resources and expertise, and TF self confidence in its own conclusions and in dealing with DOE.

Problems Shown by State Rejection of the MRS

- MRS siting effort did not meet the criterion that all stakeholders must see some benefit (8).
- DOE used different siting strategies for the state and for the local area. For site location at the state level, it was the old decide-announce-defend (9) approach. For impacts at the local level, they used negotiation.
- Regional and state interest groups did not participate in any joint evaluation and negotiation process as did Oak Ridge and Roane County.
- No local task force, no matter how competent or thorough, can speak for other interests.
- TF insiders improved TF legitimacy with DOE at the expense of legitimacy with the state and region which assumed that the TF was dominated by DOE views.

The MRS and the Nuclear Waste Policy Act

- More attention must be given to local control and power sharing if local acceptance of N-waste facilities is to be achieved.
- Local acceptance is but one part of a complex set of arrangements in a successful siting.
- The NWPA needs revision to allow local negotiation and direct local-DOE contracts. Negotiation by the state on behalf of local interests is unconvincing to local leaders.
- After the state rejected the Roane County site, an

TABLE 1

COMPARISON OF MRS TASK FORCE CONDITIONS
AND DEPARTMENT OF ENERGY RESPONSE

Task Force Conditions	DOE Response
Tax equivalency payments beginning with authorization of MRS.	Accepted. Binding conditions in C&C agreement on valuation formulas, mediation board for disputes.
Local citizen oversight/review board with power to stop accepting waste if pre-agreed standards are not met.	State-level Steering Committee (two local and seven other state, public, industry and DOE representatives). Powers limited to review and suggestion. Chair named by DOE in consultation with governor.
C&C agreements between DOE and local governments in MRS authorizing legislation.	Only state-DOE consultation and cooperation (C&C) agreements discussed.
Property value insurance for nearby residents.	Not proposed.
Mitigate economic development impacts by payments, contractor proximity, location of related private sector activities, and training programs in local educational institutions. Local procurement requirement.	Mitigation payments. Related activities in private sector. Contractor proximity to be selection factor. Training programs through state and local educational institutions. Existing federal procurement provisions.
Diversification of local industrial base.	Will take appropriate actions to encourage diversification.
Location of ancillary DOE and MRS support support activities in Oak Ridge.	Place civilian radwaste transportation system management and new transportation operations and research center at Oak Ridge.
Replace loss of CRBR industrial site.	If land becomes excess to DOE needs.
Public education program on MRS facility, existing DOE programs, and DOE cleanup.	Mitigation payments (MRS only). American Museum of Science and Energy exhibits and information (MRS only).
Highway improvements.	To be addressed in C&C agreement. DOE to work with state and local representatives to identify other improvements needed.
Emergency response training and funding.	Assistance to state for adequate capability, equipment and training. DOE to work with state to develop training standards, will ensure comprehensive training program.
"Gold Star" transportation inspections. Other transportation issues--escorts, methods, intermodal transportation, speeds, preferred routes.	Funding for comprehensive state inspections of spent fuel shipments arriving and leaving. Other issues to be addressed in C&C agreement and in nationwide consultation.
Linkage of DOE cleanup schedule for Oak Ridge reservation with MRS construction schedule.	No commitment made. Explanation of status, plans of current joint cleanup task force (DOE, EPA, state). DOE committed to cleanup as soon as funding and agreement on techniques available.
Complete decontamination and decommissioning of site for unrestricted use at end of life.	Accepted.
Preventing a permanent MRS: Only 300 T. accepted before repository licensed.	No waste accepted until NRC construction license for repository.
Limit storage capacity to 15,000 T.	Accepted.
Overdue storage penalty.	Not mentioned.
Limit storage to 10,000 T before outshipments begin.	Not mentioned.
Low level waste shipped out of state.	Low level waste shipped off site.
Tourism impacts.	Mitigation payments.
Esthetic appearance of MRS.	Accepted.
Visitor center at facility.	Accepted.

adjacent county expressed interest in having the MRS with all the TF conditions plus its own conditions. This development provides unexpected validation of the TF success in changing the net local benefit balance from negative to positive.

* The MRS experience shows we are closer to a viable siting process for controversial facilities, but not there yet.

* Local nuclear waste siting acceptance is doubtful anywhere except in existing nuclear host areas or areas needing the economic benefits.

CONCLUSIONS

The citizen task force process and the conditions required by the MRS TF are a landmark in the nuclear waste siting effort. They provide a new floor to the debate and the arrangements likely to be required by host entities in the future. The TF provided a real world test of the value of compensation and incentive mechanisms in crafting a package of arrangements acceptable to a particular public (10,11, 12). The MRS siting effort also revealed limits to DOE's power to conclude satisfactory negotiation with local governments.

Much more attention must be devoted to local control and power sharing issues. If Oak Ridge and Roane County, an area long familiar with nuclear R&D activities and their management, set such conditions to overcome distrust, will any other locale be satisfied with less?

But, the MRS chapter raises more questions than it answers. Acceptance was achieved only in the local area, while intense opposition arose elsewhere int he state and region. Why did negotiation not occur between DOE and the state? Did DOE try hard enough to negotiate with state authorities? Why did DOE not negotiate the MRS site location as it did local site acceptance? And how should DOE have structured its interaction with state and regional groups?

In the matter of public trust and distrust, how do we get on the road to maybe, as happened in Roane County and Oak Ridge, rather than on the polarized yes-no track followed by the state and the other Tennessee site.

REFERENCES

1. E. PEELLE, "Innovative Process and Invovative Solutions: A Case Study of Local Public Acceptance of a Proposed Nuclear Waste Packaging and Storage Facility," to Symposium on Land Use Management of Reno Dykes Institute for Environmental Management, New York, New York, April 3-4, 1986, Praeger Press (1987) in press.

2. J. KING, "The DOE's MRS Proposal: Responding to Community Concerns," Nuclear News, 29, 59-60 (February 1986).

3. E. B. SIGMON, "Achieving a Negotiated Compensation Agreement in Siting: The MRS Case," accepted for publication in J. Policy Analysis and Management, (1987).

4. U.S. DEPARTMENT OF ENERGY, Office of Civilian Radioactive Waste Management, "The Role of the Monitored Retrievable Storage Facility in an Integrated Waste Management System," MRS-3, (September 1985).

5. E. W. COLGLAZIER, "The MRS: An Assessment of Its Need and Feasibility," Forum for Applied Research and Public Policy, 29-37 (Spring 1986).

6. CLINCH RIVER MRS TASK FORCE, "Recommendations on the Proposed Monitored Retrievable Storage Facility," Roane County and City of Oak Ridge, Tennessee (October 15, 1985).

7. U.S. DEPARTMENT OF ENERGY, Office of Civilian Radioactive Waste Management, "Monitored Retrievable Storage Submission to Congress, Proposal for Construction of an MRS," Vol. I, Draft, DOE/RW-XXXX (December 1985).

8. T. COTTON, "The MRS Facility: Radioactive Waste Management at a Crossroads," Forum for Applied Research and Public Policy, 18-24 (Spring 1986).

9. D. DUCZIK, "Citizen Participation in Power Plant Siting: Aladdin's Lamp or Pandora's Box?," American Planning Association Journal, 154-166 (April 1983).

10. S. CARNES, E. COPENHAVER, J. SORENSEN, E. SODERSTROM, J. H. REID, D. BJORNSTAD, and E. PEELLE, "Incentives and Nuclear Waste Siting: Prospects and Constraints," Energy Systems and Policy, 7, 4, 323-351 (1983).

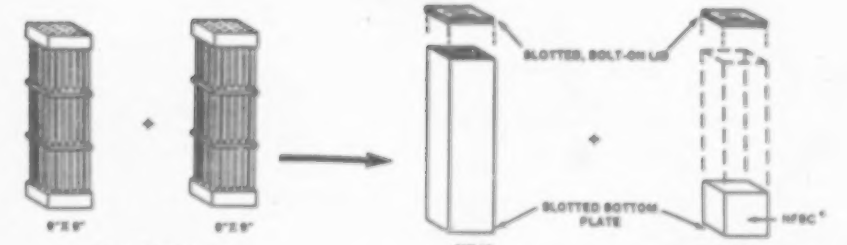
11. J. SORENSEN, J. SODERSTORM, and S. CARNES, "Sweet for the Sour: Incentives in Environmental Mediation," Environmental Management, 10, 287-294 (1983).

12. E. PEELLE and R. ELLIS, "Hazardous Waste: Are There Ways out of the 'Not-in-My-Backyard' Impasse?," accepted for publication in Forum of Applied Research and Public Policy, (1987).

ATTACHMENT B

CONSOLIDATION COMPARISON

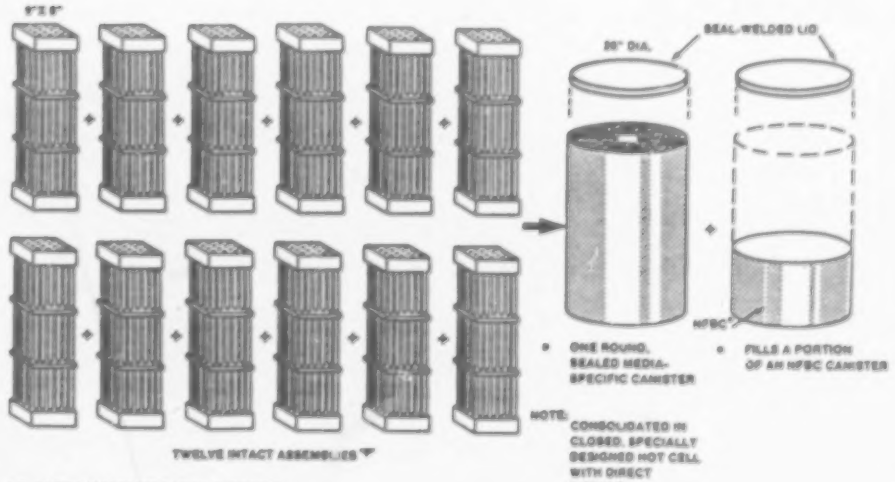
AT-REACTOR*



- TWO INTACT ASSEMBLIES
- ONE SQUARE CANISTER
- FILLS A PORTION OF AN NFBC CANISTER

NOTE:
- OPEN (NOT SEALED) FOR WATER COOLING, MAY HAVE TO BE RECONFIGURED FOR DISPOSAL
- SAME DIMENSIONS AS AN INTACT ASSEMBLY TO ALLOW RE-INSERTION IN RACK
- CONSOLIDATED IN OPEN POOL, UNDER WATER (DIRECT VIEWING IS DISTORTED)

MRS*



TWELVE INTACT ASSEMBLIES▼

- ONE ROUND, SEALED MEDIA-SPECIFIC CANISTER
- FILLS A PORTION OF AN NFBC CANISTER

NOTE:
- CONSOLIDATED IN CLOSED, SPECIALLY DESIGNED HOT CELL WITH DIRECT VIEWING

* PWR FUEL FOR ILLUSTRATION PURPOSES

▼PROJECTED SALT DISPOSAL CANISTER AND LOADINGS FOR ILLUSTRATION PURPOSES

* NFBC: NON-FUEL-BEARING COMPONENTS OF ASSEMBLIES (e.g. END FITTINGS, GRID SPACES, GUIDE TUBES)

6613-665306 4/15/97

STATEMENT OF

STEPHEN H. KALE
ASSOCIATE DIRECTOR
OFFICE OF GEOLOGIC REPOSITORIES
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

U.S. DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JUNE 29, 1987

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss activities related to site characterization of candidate sites for the Nation's first geologic repository for spent fuel and high-level radioactive waste. With me are the Project Managers for each of the three sites; these gentlemen will provide you with testimony concerning key topics at each of their sites.

Before I introduce them, I would like to very briefly summarize the status of our work on the first repository.

Following the President's approval May 28, 1986, of the Secretary's recommendation of the sites for characterization at Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington, technical planning work specific to the three sites entered an advanced stage. The most prominent of the many major tasks which faced us was, and is, the preparation of the three Site Characterization Plans. These plans have been under development for over two years. They are being prepared by the three project offices in close collaboration with my staff. In their individual remarks, the Project Managers will provide you with a description of the progress that has been made for each Site Characterization Plan and will explain how we are addressing the many technical issues confronting us at each site.

There are four purposes of site characterization, a phase of the waste program which began with the President's approval of three sites: (1) to collect and analyze the extensive and complex geologic and environmental data necessary to evaluate the

suitability of a site for development as a repository; (2) to develop site-specific designs both for a repository and for the waste package to be emplaced in the repository; (3) to prepare an environmental impact statement; and (4) to develop the information necessary to receive a construction authorization for a repository from the U.S. Nuclear Regulatory Commission (NRC).

Because of the various stages of activities at each candidate site, activities will not be entirely in parallel. Site characterization will require five-to-seven years, depending on the site. It will consist of surface-based field studies, construction of an exploratory shaft facility and the detailed tests conducted below surface in that facility.

I believe it is important to point out that site characterization is a non-radiological activity. That is to say, no radioactive waste will be introduced into any one of the three candidate facilities until a site is selected and approved by the President, a construction authorization is received from the Nuclear Regulatory Commission, the repository is constructed and DOE begins receiving spent fuel and high-level waste for disposal. For those candidate sites not selected, approved and licensed as a repository, DOE will restore the site to the original condition, as required by the Nuclear Waste Policy Act of 1982 (NWPA).

The NWPA requires that, prior to sinking shafts at any candidate site, DOE make the plan initially available to the public, and that DOE hold public hearings in the vicinity of the

candidate site to inform the residents of the area of the plan and to receive their comments.

The Site Characterization Plans (SCP's) are key technical planning documents and of major importance to the States, Indian Tribes, and the public--as well as to the NRC and to us at DOE.

The SCP's will provide a thorough status of what is known about the site, describe the conceptual designs for the repository and the waste package, identify necessary additional information requirements and present plans for obtaining all such information needed to support siting, licensing, and design. DOE is currently engaged in intensive development and review of the SCP's for each of the three sites. The development is proceeding extremely well and is leading to high quality documents which will carefully detail the logic for the data collection and evaluation procedures necessary to assure careful and thorough site characterization. As the draft chapters become available, they are being provided to the States and Indian Tribes. As characterization proceeds, six-month updates of the SCP's will be issued to keep current the documentation of the test program.

I would now like to introduce the Project Managers. Since we generally address the candidate sites in alphabetical order by State, I will introduce our Project Managers as such. Mr. Donald Vieth is Project Manager for the Yucca Mountain site in Nevada. With your concurrence he will speak first. He will be followed by Mr. Jefferson Neff who is Project Manager for the Deaf Smith County site in Texas. Mr. Neff will then be followed in turn by Mr. John Anttonen, Project Manager for the Hanford site in Washington.

76-701 0 - 87 - 4

Thank you, Mr. Chairman. I would be happy to answer any questions you may have. And as we proceed, our Project Managers and I are prepared to address your questions or those of other Committee members as you wish.

STATEMENT OF

J. O. NEFF, MANAGER

U.S. DEPARTMENT OF ENERGY SALT REPOSITORY PROJECT OFFICE

BEFORE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

June 29, 1987

Mr. Chairman and Members of the Committee:

My name is Jeff Neff and I am the Manager of the U.S. Department of Energy's Salt Repository Project Office, now located in Hereford, Texas. The responsibilities of my office are to manage the day-to-day activities of the site suitability investigations of the designated nine-square-mile site located in Deaf Smith County, near Hereford in the Texas Panhandle. The location is indicated on several of the attachments.

My remarks will be divided into five categories: (1) a brief history of how the Deaf Smith County site was designated; (2) a review of major issues for the Texas site and how these are expected to be resolved during site characterization; (3) a summary of major institutional issues; (4) a summary of consultation and cooperation activities with the State of Texas, through its Nuclear Waste Programs Office; and (5) highlights of current and past interactions with local governmental officials and the public in the Panhandle.

History of Salt Site Activities

The process that led us to the site in bedded salt in Deaf Smith County, Texas, began in 1957, when a panel of the National Academy of Sciences recommended salt formations in the United States be studied for potential underground sites for permanent disposal of high-level radioactive waste. The U.S. Geological Survey launched national screening studies the following year.

In 1976, the Survey identified two bedded salt areas in the Texas Panhandle for further study--the 18-county Palo Duro basin south of Amarillo, and the 5-county Dalhart basin north of Amarillo.

Other salt deposits identified by USGS in the national screening process for further study included bedded formations in the Paradox Basin of Utah and Colorado; the Salina Basin in Michigan, New York and Ohio; and salt domes in Louisiana, Mississippi and eastern Texas. (See Attachment A.)

Within those regions, DOE then moved, step-by-step, to identify smaller areas for more intensive study, evaluating thickness and depth of salt, the presence of faults, seismicity and salt dissolution. Also considered were such factors as the existence of other natural resources such as oil and gas, land uses, and density and distribution of population. (See Attachment B.)

Directed by the Nuclear Waste Policy Act of 1982 (NWPA) to select potentially acceptable geologic sites for a repository, the DOE selected nine possible sites in six states. Two of the sites were located in bedded salt in the Texas panhandle--300 square miles in Deaf Smith and Oldham counties and 190 square miles in Swisher County.

Each of the two Texas sites later was narrowed to nine square miles for the environmental assessment process required by the NWPA.

In May 1986, three of the nine sites evaluated in the environmental assessments were recommended to and approved by the President for characterization. The salt site selected for

further study is in Deaf Smith County, 40 miles southwest of Amarillo. (See Attachment C.) Documents describing this process are listed on Attachment D.

Major Issues at the Deaf Smith County Site

The next step in the process is to conduct site characterization at each of three sites, including the site in Deaf Smith County, Texas. The site characterization phase was conceived and placed in the NWPA by Congress specifically to obtain data of the surface and at the depth where the repository would be constructed to determine the site's suitability. This next step is designed to address the many issues and questions which your constituents and all of us in the program need to have answered before a site is recommended for the geologic repository. The U.S. Nuclear Regulatory Commission, and state and local groups will review and monitor plans and results.

These issues remain to be resolved at the Deaf Smith County as well as at the other two sites. Methods to resolve these issues are being incorporated in the Site Characterization Plan, Environmental-Regulatory Compliance Plan, and the more than 50 detailed site study plans, which spell out the specific work in geotechnical, environmental, and socioeconomic areas.

Attachment E indicates many of the planned activities. There are four major concerns that I would like to discuss today: the potential for contamination or depletion of the Ogallala and Dockum aquifers; management of excavated salt; effects on the agricultural economy and public perceptions of how studies will affect agribusiness; and general socioeconomic impacts.

o The potential for contaminating or depleting the Ogallala and Dockum (Santa Rosa) Aquifers

First, some general information about project design. The repository system itself is being designed and would be operated to prevent contamination of surface water or ground water. Waste brought to a repository would be in solid form and in heavily shielded casks. Waste packages would be emplaced 2,500 feet below the surface in a stable salt formation.

The rock strength and very low permeability of this formation will be verified during the first seven years of site characterization. Multiple barriers will contain the waste's movement. Engineered barriers--including an insoluble waste form, a corrosion-resistant metal container, repository backfill material, and shaft seals--will be added to the natural barriers of the rock at extreme depth.

The Dockum aquifer is more than 1,000 feet above the proposed depth of a repository; the Ogallala aquifer is approximately 2,000 feet above the proposed repository. In general, our analyses show that the pressure for the aquifers in the vicinity of the Texas site decreases with depth. This creates the potential for groundwater at repository depth to flow down to the deeper saline aquifers rather than upward toward the Ogallala and Santa Rosa aquifers.

The concern is that the Ogallala and Dockum aquifers could be contaminated during construction of shafts for site characterization. This will be avoided through use of a proven (over 100 years old) ground freezing technique which is widely employed for digging tunnels and mine shafts where water is

anticipated. For example, shafts for mines in Saskatchewan, Canada, have successfully penetrated major aquifers with ground freezing during shaft construction. This method is being used successfully at the repository being constructed in the Federal Republic of Germany at Gorleben.

As a part of shaft construction, seals and plugs will be placed at required intervals to prevent water from moving down the shaft as well as to protect water quality. Throughout the construction and operation process of the exploratory shaft facility and the repository, DOE will continuously monitor the shafts for stability and performance of the lining and seals.

Water requirements for a repository in the Texas Panhandle, averaging the amounts to be required for construction and waste emplacement, are expected to be approximately 443 acre-feet per year. This may be reduced by recycling the water. This is equivalent to the amount of water needed to irrigate from 265 to 400 acres.

o How excavated salt at the Deaf Smith County site will be managed

Assuring that excavated salt does not contaminate water or soil is an important consideration in DOE's program. Salt management procedures during the construction of an exploratory shaft for site characterization and the repository will be similar to those commonly used in the mining industry. The amount of salt excavated for site characterization will be far less than the amount excavated for the repository. A combination of water spraying (resulting in the salt crusting over),

retention ponds, impermeable liners, runoff control structures and monitoring of soil and crop conditions are proven techniques for effectively reducing the possibility of soil or water contamination from the excavated or blowing salt.

During site characterization, shallow boreholes and wells will be drilled to study rock characteristics and groundwater. Any salt-contaminated fluid produced during drilling will be stored temporarily in tanks or lined mud pits until it can be disposed of off site.

Two exploratory shafts to conduct more detailed studies at depth will also be constructed. Prior to the mining of salt and any storage on the surface, DOE plans to conduct laboratory-scale experiments on wind dispersal of salt and on dust formation. These data will be evaluated against actual salt pile experience at several locations in the country and against actual site meteorological data. Based on these evaluations, a decision will be made whether to store the salt on site, either covered or uncovered, or to ship it off site. If the excavated salt is stored temporarily on the surface, it would be in a pile less than 50 feet high, covering less than 5 acres, and containing about 140,000 tons of salt. Most of the salt would be used for backfill if the site is not selected for a repository.

Throughout construction and operation of the exploratory shaft facility and the repository, salt management techniques will be monitored. For example, air quality stations will be established and groundwater downstream from the salt pile will be monitored. We foresee that neighboring farmers will aid in the monitoring through review and comment on our plans and

suggestions for placement of air sampling monitoring stations. Any effects of wind-blown salt will be apparent on plants within the site prior to possible effects outside the site. The appropriate correction or remedial will be taken immediately if effects are seen.

o The effects on the agricultural economy of the area, including the public's perception of a repository

We believe that how well this project is perceived will depend on how well it is operated. DOE intends to construct and operate the exploratory shaft facility and repository according to the best standards of industrial and scientific practice, under continuous scrutiny by federal agencies such as the Nuclear Regulatory Commission, the Mine Safety and Health Administration, the Environmental Protection Agency, the State, and local and scientific groups, including the National Academy of Sciences.

While a high-level nuclear waste repository has not yet been constructed, the technology for operating a repository is based on well-known principles and has been demonstrated successfully in Nevada (the Nevada Nuclear Waste Storage Investigations project) and in the Federal Republic of Germany (programs of the Physikalisch-Technische Bundesanstalt, PTB). A demonstration project is also planned at the Waste Isolation Pilot Project in Carlsbad, New Mexico.

There are two parts to the agricultural issue: land use and the possible effect a repository would have on sales of agricultural products, e.g., the "perception" issue.

The 5,760-acre site in Deaf Smith County includes 5,168 acres of cropland. A major part of the surface acreage will

remain in agricultural use during site characterization activities because only about 61 acres will be required for the exploratory shaft facilities. Approximately 600 acres, including the 61 acres, will have limited access because of the many activities to be conducted there. Access to additional parcels will be necessary for specific geologic and environmental activities, but most of these will be small plots, the need of limited duration, and the placement and timing flexible. DOE will also need to protect the nine-square-mile site for a repository by prohibiting or regulating deep drilling and certain other subsurface activities. This will be accomplished by entering into agreements with affected landowners to regulate these activities. Landowners will be compensated for all land uses.

If the Deaf Smith County site is selected for a repository, from 400 to 700 acres will be required for the surface facilities. Agricultural activities may be possible on surface acreage outside the 400 to 700 acres of working facilities, subject to restrictions by the Nuclear Regulatory Commission. In total, an estimated 5,836 acres (0.61 percent of the total productive land in Deaf Smith County) could be affected if a repository is constructed. Estimated losses to cattle and livestock production in Deaf Smith County would be approximately $1.5 million per year as a direct effect of repository construction.

Regarding the perception issue, we have sought information from comparable experiences to help us understand the potential effects of locating such a facility near agricultural areas. At

the Three Mile Island nuclear power plant, after the accident that certainly had high national visibility, a study by the state health department indicated there were no sustained effects on the area's agricultural image. Sales of agricultural products were affected for only about one week following the accident. Agribusinesses are conducted adjacent to many nuclear facilities without apparent effects on sales of products. Admittedly, building a repository is a unique step and we intend to continue studying this issue during the five to seven years of site characterization.

o Socioeconomic impacts of the project on communities

On April 22, 1987, DOE provided an estimate to the Texas Advisory Council on Intergovernmental Relations that 3,215 people, including workers' families, will move to the Panhandle during the five to seven years of site characterization studies in Deaf Smith County. An estimated 2,283 would locate in Amarillo, 402 in Hereford, 432 in Canyon, 28 in Vega, and 18 in rural areas. Of these people, 1,088 are project workers.

During site characterization, we estimate that approximately $475 million will be spent on materials and labor, including many purchases in the local area. Later I will describe our attempts to maximize the awarding of contracts to local companies and the hiring of local workers, within federal procurement regulations.

The Deaf Smith County Environmental Assessment estimated peak migration to the area would be 2,520 workers during repository construction and 2,040 workers during repository operation.

The Environmental Assessment estimated that direct purchases of materials during repository construction will be $11.3 million per year (1983 dollars), of which 10 percent are expected to be made in the local area. During operation, direct local purchases are estimated to average about $3 million per year.

Additional funding will be made available to local taxing districts during site characterization and during repository construction and operation in the form of payments-equal-to-taxes, as explained in more detail later. Currently, funds are provided through grants to the Texas Nuclear Waste Programs Office and local groups such as the Deaf Smith County Waste Deposit Impact Committee for review and oversight purposes.

Status of Other Site Activities

Several other activities are also important in regard to the Deaf Smith County site. These include issues related to impact mitigation during site characterization and payments-equal-to-taxes, relocation of staff to the Panhandle, special needs of landowners, and the ability of local businesses and people to obtain contracts and jobs. I would like to address each issue in detail.

o Grant funds for impact mitigation during site characterization are not provided for by the Nuclear Waste Policy Act. This has caused concern among Texas communities near the site in Deaf Smith County, because some local leaders fear that this project is already causing significant impacts. They believe that DOE should be prepared to mitigate impacts as they occur. DOE believes, as stated in the environmental assessment,

that site characterization will not have significant adverse impacts. To the extent practicable, we are required by the Act to conduct activities in a manner that minimizes any significant adverse impacts. We plan to monitor all activities and to mitigate any tangible demonstrated effects.

We have been in regular communication with local leaders, exchanging information about the project's effects on the schools, services, and so forth as part of that monitoring process. In addition, we have investigated and provided to them information on other federal funding sources, worked through the Texas Nuclear Waste Programs Office to approve grant funds to help communities study the program and prepare to assess impacts, and tracked staff plans for locating in communities in the Panhandle to anticipate immigration effects.

o The Nuclear Waste Policy Act does require DOE to provide payments-equal-to-taxes during site characterization. These payments can be used by an eligible state, unit of general local government, or affected Indian Tribe (in accordance with applicable state and local laws) for various purposes, including mitigating impacts that may occur as a result of site characterization. Such payments would be comparable to those a private business would normally pay in taxes on similar work. DOE's policy is that such payments will be retroactive to May 28, 1986, when sites were designated for characterization.

As Mr. Rusche previously has brought to your attention, the Act provides that payments can be made only to units of general local government, defined as a general purpose political subdivision of a state. The Vega Independent School District is

a special district and thus the Department reluctantly concluded that the District is not an eligible jurisdiction. This issue pertains to all special taxation districts in Texas. As Mr. Rusche has stated, DOE does not believe this to be the intent of the NWPA, but we are constrained by the law. On the PETT issue as well as the grant issue, we need legislative authority to resolve this issue successfully.

o Representatives of the state and several communities believe that they have already been impacted by transition of project staff to the Panhandle. The Salt Repository Project Office is following a phased relocation plan to gradually relocate project staff to the Panhandle. The process began with 11 people moving in March and is designed to move people concurrent with when their work can better be accomplished in the area than from Columbus, Ohio. Currently, about 70 DOE and contractor staff are located in the Panhandle. Approximately 70 additional staff members will relocate this summer.

By fall, we expect the project workforce in Hereford to reach approximately 300. The relocation was phased to avoid adverse impacts to the project as well as the communities, including surges of in-migration, undue interruptions of technical work, and personal relocation needs.

o Land acquisition and access issues are of critical concern to landowners within and near the nine-square-mile site in Deaf Smith County. We are attempting to interact with landowners and operators with utmost sensitivity to their feelings and interests. We met with landowners in Vega on February 23, 1987,

to provide information on upcoming site characterization activities and listen to their suggestions. We are now awaiting the Real Estate Planning Report from the U.S. Army Corps of Engineers, which will describe the lands needed and recommend the property interests that should be acquired. This report will be ready this summer and relevant portions will be sent to the state and all landowners. We will then meet with landowners to discuss land acquisition plans. Through this process we hope to be active in negotiations this fall.

o Several local officials have stressed that, wherever possible, the Salt Repository Project should benefit local communities. We have made this our goal.

DOE demonstrated its intent to bring positive benefits to affected communities by choosing to locate our offices in Hereford, as well as the office of the project's integrating contractor (Battelle Memorial Institute) and exploratory shaft construction management contractor (Parsons-Redpath). We are also attempting to make as many purchases as possible in Hereford, subject to technical requirements and federal procurement regulations.

Since the beginning of relocation in March, the Salt Repository Project has spent more than $1 million in the Panhandle for supplies, office equipment, and materials. Nearly 40 area people have been hired in professional and secretarial categories.

We are working with business leaders in Hereford to develop a workshop for local suppliers and contractors to explain federal

procurement procedures and assist them in learning how to expand business opportunities and bid for contracts. In addition, we have made mailings to people who have expressed an interest in job opportunities, explaining the process for federal and contractor jobs. And we are posting job opportunities with the Texas Employment Commission offices as well as advertising them in newspapers throughout the Panhandle.

Consultation and Cooperation with the State of Texas

Throughout nine years as manager of DOE's salt repository studies, I have worked frequently and closely with state officials and agencies in Texas. So I can attest personally to the high quality and productivity of interactions with Governors Clements and White, their representatives and committees, and other officials and offices in a state government that I have come to know and respect as extremely competent, professional--and, yes, complex.

The record shows, in fact, that from the beginning, the state of Texas has taken an active and valuable role as a key state in the repository siting process. The Bureau of Economic Geology at the University of Texas at Austin performed early evaluations of the suitability of East Texas salt domes (which were dropped from consideration in 1980) and for more than 10 years has worked under contract with my office and with other contractors in Panhandle field studies. Written interim agreements dating to 1980 have guided consultation and cooperation with the Bureau of Economic Geology and other Texas agencies. Texas representatives have been included in hundreds of technical and institutional meetings and workshops.

In short, be assured that the official voice of the state of Texas in this program has been heard--long, loud and clear--and in a variety of settings and channels of communication: comments on many technical documents, frequent written and oral comunication, extensive testimony in pre-site nomination scoping hearings, draft guidelines hearings, and meetings and hearings on draft environmental assessments of the potentially acceptable repository sites.

Since the designation of a Texas site for characterization 13 months ago, areas of interactive activity which no doubt interest members of this committee include preliminary steps to negotiate a consultation and cooperation agreement, state participation in planning and policy development, and the sharing of information.

o C&C Agreement--In a letter July 1986, to the director of the Texas Nuclear Waste Programs Office, I invited the state to meet with DOE and representatives of Nevada and Washington to initiate the process of developing consultation and cooperation agreements as provided by the Nuclear Waste Policy Act. In response to a subsequent expression that Texas preferred individual involvement in such negotiations, in November 1986 I renewed DOE's offer to negotiate an agreement, this time directly with the state. In several informal discussions since then, the Texas Nuclear Waste Programs Office director has indicated that Texas is not yet prepared to undertake negotiations to attain formal agreement.

o Salt State Meetings--After seven salt sites in four states were selected in 1983 as potentially acceptable for characterization, my office met with representatives from Texas and other affected states in a series of bi-monthly meetings held from July 1983 through November 1984. These meetings provided interactive information exchange on institutional and technical issues.

Such regular, detailed sessions laid much of the foundation, I believe, for accelerated involvement of Texas and other states in a variety of positive and productive interactions to plan site characterization.

Texas representatives currently are fully involved in 14 program working groups, e.g., DOE's Environmental, Transportation, Quality Assurance and Institutional/Socioeconomic Coordinating Groups, as well as in development of the highly technical Deaf Smith County Site Characterization Plan and a local public participation plan.

o Information--To facilitate effective state involvement in site characterization, SRP has met or talked with Texas officials several dozen times in the past year on a wide range of subjects. They include site transition planning, land access and the DOE-U.S. Army Corps of Engineers agreement, plans for public information and briefings, plans for early site studies, annotated table of contents and draft chapters of the Site Characterization Plan, site study plans, the Environmental-Regulatory Compliance Plan, environmental and socioeconomic monitoring and mitigation plans, and applications of the payments-equal-to-taxes provisions of the NWPA.

o Texas Grant Status--The Texas Nuclear Waste Programs Office applied to DOE for a grant of $6.7 million for the 1987 fiscal year. In December 1986, we approved an initial amount of $2.5 million following an analysis of the state's request. We asked for additional information to better understand the scope of work for the remaining amount.

We have now received this additional information and expect to release additional grant funds soon. DOE has instituted new procedures to expedite processing and approving state and tribal grant requests.

In addition, at the Salt Repository Project Office we are placing more emphasis on reviewing grants, including the addition of a new staff member to expedite the project office's process.

Local and Public Interactions

Since early March, when we began relocating staff to the Texas Panhandle, we have attempted to increase interactions with and personal response to affected parties. These have included:

- Bi-weekly status reports to local offices of area Congressional representatives.
- Weekly meetings at the Community Center in Hereford, where my Deputy Manager provides status reports on relocation of staff, hiring, field activities, office procurements, and other ongoing activities.
- Communications with landowners, including the February meeting, mailing of revised land acquisition schedule

in May, and plans for a meeting to be held by DOE for landowners this fall to discuss the DOE Land Acquisition Plan.

- Daily verbal or written response to people interested in jobs or contracts on the project.
- Weekly discussions with the executive director of the Deaf Smith County Waste Deposit Impact Committee, based in Hereford.
- Appearances before the Deaf Smith County Commissioners.
- Discussions with Vega Independent School Board officials about possible impact mitigation funds.
- Three briefings for staff of the City of Amarillo in June.
- Regular access to news media representatives for program updates and in-depth articles about transition and study plans.
- Hired nearly 40 local people in professional and secretarial positions.
- Speakers' bureau presentations--an average of about 20 per month--where members of my staff and contractor personnel fill requests from community groups, schools, and technical organizations throughout the Panhandle to provide information about this program.
- Program exhibits at technical group meetings, library association conventions, and area career days.
- Planning with local leaders for workshops for local business on purchasing and contracting opportunities.

- Finalized local procurements for leasing office space in Hereford, as well as equipment and furniture for DOE and contractor staff.
- Teacher workshop being planned, coordinated with the regional office of the state education agency.
- Plans to open a public information office in Amarillo, similar to those in Hereford, Vega, and Tulia.
- Presentations by Panhandle academicians to staff in Columbus planning to relocate, to inform them about the culture, history, and economic background of the area.

Prior to beginning relocation of offices to the Panhandle, the week of February 23, 1987, we conducted briefings for landowners, local officials, and the public to provide information on the activities and schedule for work connected with site characterization. People in Hereford, Amarillo, and Vega had opportunities to hear brief presentations about activities, ask questions or make suggestions to us and then to interact personally with more than 40 technical staff who are planning the work.

The Salt Repository Project Office has also taken the first steps on the road to developing a public participation plan, which is designed to assure that the project's technical work scope is fulfilled while the concerns of local citizens are addressed. As you know, the need to involve the public in order to build confidence in the disposal process is one of the seven findings of the Nuclear Waste Policy Act. DOE's further commitment to public participation is described in several guidance documents as well as the Mission Plan. In the Salt

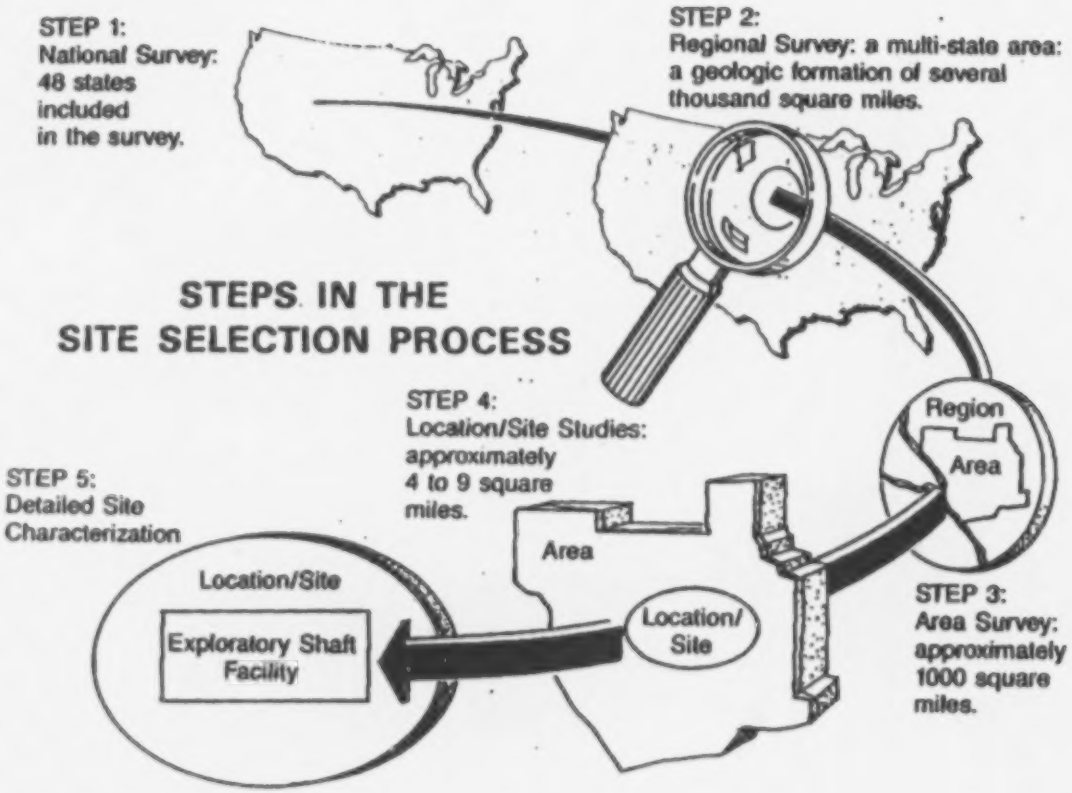
Repository Project Office, we have contracted with a private consultant to follow a three-step process to develop a public participation plan. The process shows people how to develop a schedule of activities on which they want to provide input and establishes methods for them to have affect on study planning, data evaluation, and decision-making.

After more than three years of preparation, we started the public participation planning process in early May by holding working sessions in Hereford and Amarillo to explain the process.

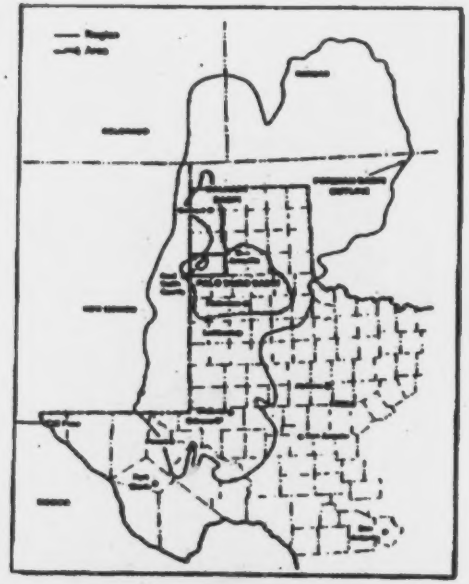
Our consultant is now working with project technical staff on ways the public can be involved effectively in site study planning. In July and August, we will be talking again with local groups about each community's needs and interests, so we can begin developing the draft plan.

Meanwhile, we are continuing the public outreach activities that have been available to people in Texas for more than five years. These are summarized on Attachment F.

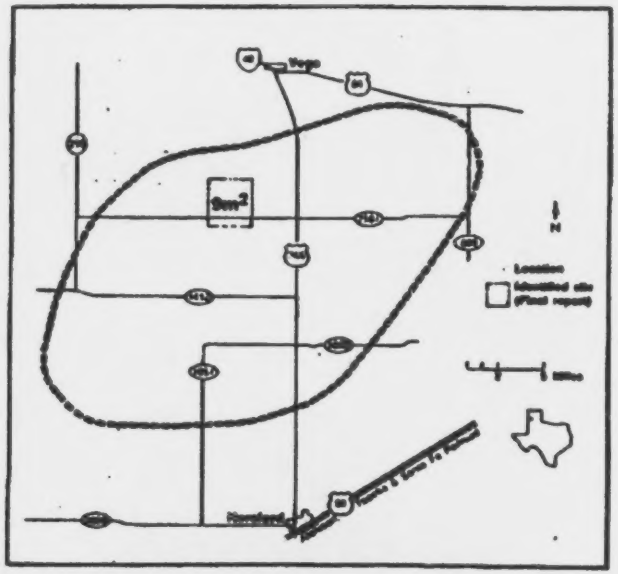
This concludes my statement. I would be happy to answer any questions you may have about the Texas project.


STEP 1:
National Survey:
48 states
included
in the survey.
STEP 2:
Regional Survey: a multi-state area:
a geologic formation of several
thousand square miles.
STEPS IN THE
SITE SELECTION PROCESS
STEP 4:
Location/Site Studies:
approximately
4 to 9 square
miles.
Region
Area
STEP 5:
Detailed Site
Characterization
Area
Location/Site
Exploratory Shaft
Facility
Location/
Site
STEP 3:
Area Survey:
approximately
1000 square
miles.

Site Exploration Program



Regional, Area, Location Screening, Permian Basin in Texas



Deaf Smith County Site

Salt Site Exploration Program Documents

Salt national survey report

Salt Deposits in the United States and Regional Geologic Characteristics Important for Storage of Radioactive Waste, by Kenneth S. Johnson and S. Gonzales, Y/ONWI/741/4/1, March 1978.

Describes the national screening of salt deposits in the contiguous United States to identify regions with rock formations with potential for further studies. . . identifies most favorable regions for regional study.

Size of salt regions

Paradox: 12,000 square miles
Permian: 80,000 square miles
Gulf: 60,000 square miles

Size of area (Palo Duro/Dalhart Basins)

14,000 square miles

Size of locations in Panhandle

Deaf Smith—400 square miles
Swisher—200 square miles

Size of site in Deaf Smith County

Deaf Smith County Site—9 square miles

Screening Documents for Texas Panhandle*

Regional:

- *Environmental Characterization of Bedded Salt Formations and Overlying Areas of the Permian Basin,* ONWI-27, 1983.
- *Evaluation of Permian Salt Deposits in the Texas Panhandle and Western Oklahoma for Underground Storage of Radioactive Wastes,* by Kenneth S. Johnson, Y/OWI/SUB-4494/1., April 1976.

Salt Site Exploration Program Documents (Continued)

- *Regional Summary and Recommended Study Areas for the Texas Panhandle Portion of the Permian Basin*, ONWI-28, 1984.

Area:

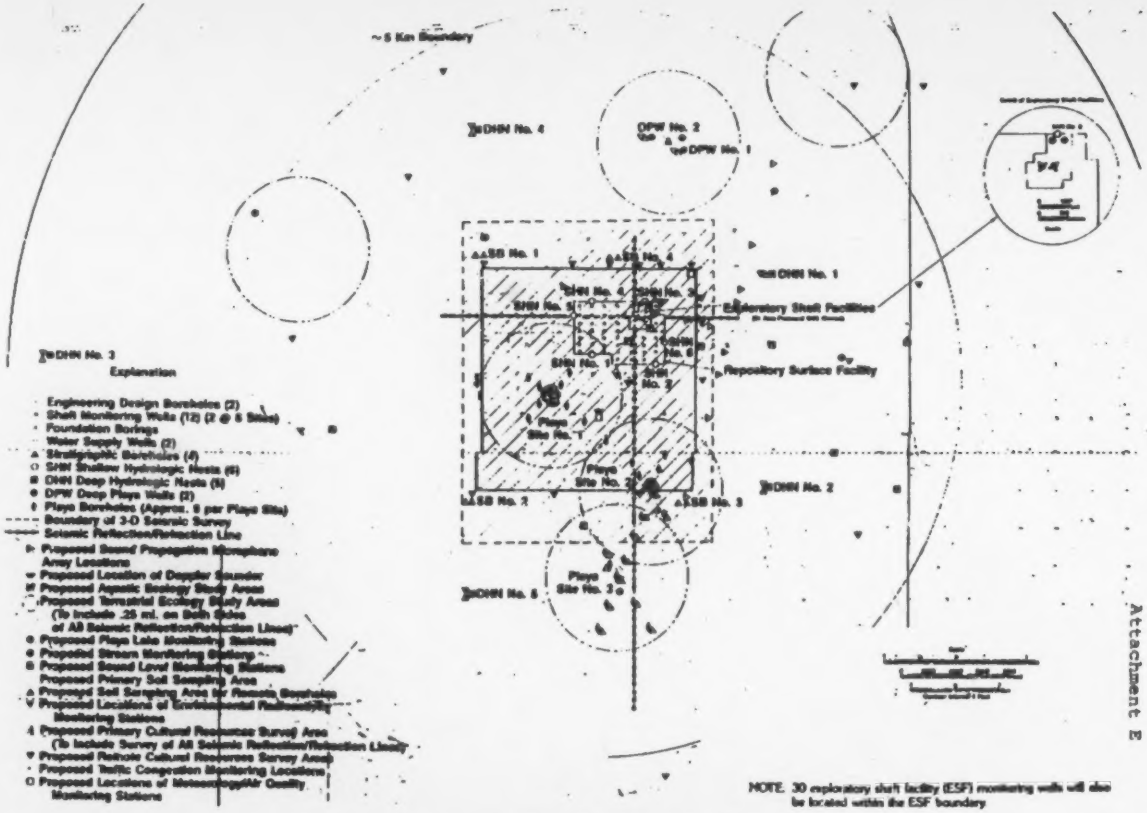
- *Area Environmental Characterization, Report of the Dalhart and Palo Duro Basins in the Texas Panhandle*, ONWI-102, Volumes 1 and 2, 1983.
- *Area Geologic Characterization Report, Palo Duro and Dalhart Basins, Texas*, ONWI-292, 1983.
- *Permian Basin Location Recommendation Report*, ONWI-288, 1983.

Location/Site:

- *Identification of Sites Within the Palo Duro Basin*, DOE/CH-10(3), 1984.

---

* All reports in Panhandle Public Libraries and DOE Information Offices


~5 Km Boundary
DHH No. 4
DPW No. 2
DPW No. 1
SB No. 1
SB No. 4
DHH No. 1
SHH No. 4
SHH No. 3
SHH No. 5
Exploratory Shaft Facilities
SHH No. 6
SHH No. 1
SHH No. 2
Repository Surface Facility
Playa Site No. 1
Playa Site No. 2
DHH No. 2
SB No. 2
SB No. 3
DHH No. 5
Playa Site No. 3
DHH No. 3
Explanation
Engineering Design Boreholes (2)
Shaft Monitoring Wells (12) (2 @ 6 Sites)
Foundation Borings
Water Supply Wells (2)
Stratigraphic Boreholes (4)
SHH Shallow Hydrologic Nests (6)
DHH Deep Hydrologic Nests (5)
DPW Deep Playa Wells (2)
Playa Boreholes (Approx. 6 per Playa Site)
Boundary of 3-D Seismic Survey
Seismic Reflection/Refraction Line
Proposed Sound Propagation Microphone Array Locations
Proposed Location of Doppler Sounder
Proposed Aquatic Ecology Study Areas
Proposed Terrestrial Ecology Study Areas (To Include .25 mi. on Both Sides of All Seismic Reflection/Refraction Lines)
Proposed Playa Lake Monitoring Stations
Proposed Stream Monitoring Stations
Proposed Sound Level Monitoring Stations
Proposed Primary Soil Sampling Area
Proposed Soil Sampling Area for Playa Boreholes
Proposed Locations of Environmental Radioactivity Monitoring Stations
Proposed Primary Cultural Resources Survey Area (To Include Survey of All Seismic Reflection/Refraction Lines)
Proposed Restricted Cultural Resources Survey Area
Proposed Traffic Congestion Monitoring Locations
Proposed Locations of Meteorological/Air Quality Monitoring Stations
NOTE: 30 exploratory shaft facility (ESF) monitoring wells will also be located within the ESF boundary

Proposed Location of Field Activities
Deaf Smith County Site

ATTACHMENT F

SALT REPOSITORY PROJECT OUTREACH ACTIVITIES

- Publications and fact sheets about the Salt Repository Project studies as well as the national radioactive waste management program.
- Audiovisual materials and exhibits for use at no cost by schools, groups, conventions, and meetings.
- Public information offices in Hereford, Vega, and Tulia, which provide local people easy access to nontechnical information as well as technical documents and electronic access to data.
- Materials supplied to libraries in the Panhandle, Austin, and major Texas universities.
- Monthly notices to more than 1,000 people on the mailing list of new materials available in information offices and libraries.
- Workshops and field trips upon request (e.g., Waste Isolation Pilot Plant near Carlsbad, New Mexico).
- Bilingual materials--one fact sheet in Spanish, a second to be available this month; a videotape describing program background, to be available this month in English and Spanish.
- Public meetings, briefings, and hearings as appropriate or requested.

STATEMENT OF

DONALD L. VIETH, PROJECT MANAGER
WASTE MANAGEMENT PROJECT OFFICE
NEVADA OPERATIONS OFFICE
DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JUNE 29, 1987

Mr. Chairman and Members of the Subcommittee:

My name is Don Vieth and I am Project Manager for the U. S. Department of Energy's (DOE) Waste Management Program Office In Las Vegas, Nevada. I am pleased to have this opportunity to discuss the Nevada Nuclear Waste Storage Investigation (NNWSI) Project that is evaluating the Yucca Mountain Nevada site, relative to development of the first high-level radioactive waste repository in the U.S. I plan to present a brief history of activities conducted at the site from May 1977 to May 1987; a description of technical issues specific to the Yucca Mountain Site and the way in which they are being addressed; the current status of the investigations at Yucca Mountain; and a summary of our interactions with representatives of the State and local governments in Nevada.

History of the Site

Let me begin, however, by identifying the Yucca Mountain site. The site is located nearly 100 miles northwest of Las Vegas in Nye County, Nevada, on and adjacent to the southwest portion of the Nevada Test Site (NTS). The site is on three adjacent parcels of Federal land, each under the separate control of DOE, the U.S. Air Force and the Bureau of Land Management, respectively. Attachment A shows the relative location of the site in the State of Nevada, and Attachment B depicts the Yucca Mountain site relative to the NTS.

Now to focus on the history to establish the site; in 1976, DOE's predecessor, the Energy Research and Development Administration (ERDA), initiated the National Waste Terminal

Storage (NWTS) Program to manage the permanent disposal of high-level radioactive waste in geologic repositories. In April 1977, ERDA proposed "prior land use" as a site screening criterion. Concurrently the U.S. Geological Survey (USGS) proposed that the Nevada Test Site (NTS) be considered for evaluation due to the multiplicity of natural geological barriers. In April 1977, ERDA expanded the NWTS program to focus on a wider variety of geologic formations in addition to those at the NTS.

As the NNWSI Project began a preliminary examination of the area, DOE established a task force to evaluate the conditions wherein the Nuclear Weapons Test Program could exist in reasonable proximity to a repository. In August 1978, DOE determined that a repository located in the 245-square-mile area in the southwest corner of the NTS would not likely create any operational conflicts in the conduct of the weapons test program, and likewise, the testing program would not adversely affect the operation of a repository. Thus did NNWSI begin to assess six potential sites: Skull Mountain, Calico Hills, Jackass Flats, Little Skull Mountain, Wahmonie Mountain, and Yucca Mountain.

In the late summer of 1978, an exploratory drill hole at Yucca Mountain confirmed the presence of layers of thick, highly sorptive tuff media. Because tuff had not been considered as a host rock for a repository, a presentation was made to the National Academy of Science (NAS) Committee for Radioactive Waste Management. After considering the potential advantages and disadvantages of this rock, the Committee supported the DOE proposal and supported the consideration of volcanic tuff and the Yucca Mountain site. Preliminary exploration at the NTS

76-701 0 - 87 - 5

continued until April 1979, when the DOE concurred with a USGS recommendation that the NNWSI Project focus on Yucca Mountain. Yucca Mountain was judged to have the best overall prospects for being considered a suitable repository site.

For the next three and one-half years, the NNWSI Project performed a series of analyses, peer reviews and technical assessments intended to confirm the focusing of activities based on limited data for the Yucca Mountain site, and identify the specific host rock at the site. The confirmation process resulted in (1) the identification and prioritization of 40 site-specific objectives based on existing DOE and Nuclear Regulatory Commission (NRC) criteria, and (2) the assessment of 31 physical attributes which vary throughout the NTS area and might have a potential impact on a repository. Finally, a study of eight comparison factors of four different rock units at Yucca Mountain resulted in the selection of the Topopah Spring Member of the Paintbrush Tuff as the specific formation for investigation to be a potential site for a repository.

This series of technical activities, which took place between April 1977 and February 1983, resulted in the development of data that provided the basis for identification of Yucca Mountain as a potentially acceptable site for the first repository under the Nuclear Waste Policy Act of 1982.

Site Specific Technical Issues and How They Will Be Addressed

The requirements for determining the suitability of a site are outlined in 10 CFR Part 960, 10 CFR Part 60 and 40 CFR Part

191. Based on these regulations, the Department has created a hierarchical structure of issues to evaluate in a systematic manner the site and demonstration of its capabilities for isolating waste for 10,000 years.

Data developed during the initial site investigations have established a fundamental understanding of the site. The Environmental Assessment, along with the Multiattribute Utility Analysis of Sites Nominated for the First Radioactive Waste Repository, presented this preliminary data in the context of the requirements to make a decision. Comments received on these documents did not identify any new areas of concern of which the Department was not already cognizant. If the comments had a common denominator, it was the statement that not enough is known about the sites to establish a final conclusion. This means that more measurements, analyses and interpretations are required before all issues are resolved and a final decision is made. This is the purpose of site characterization.

While all issues revealed in the development of the site's description must be successfully addressed, some are more challenging to unravel or are known to have a larger effect on isolation. For the Yucca Mountain site, the issues that are of specific concern fall into three major categories: groundwater characteristics, seismic-tectonic characteristics, and potential for human intrusion. Each of these characteristics can be subdivided into groups of technical issues in the following manner:

- o Groundwater Characteristics
  - Definition of the saturated zone (below the water table) hydrologic regime.
  - Potential for hydrothermal activity
  - Definition of the unsaturated zone (above the water table) hydrologic regime.
- o Seismic/Tectonic Characteristics
  - Definition of the ground motions that could affect an operating repository.
  - Evaluation of the effects of earthquakes and fault movements on waste isolation after the repository is sealed.
  - Evaluation of potential for future volcanic activity at the site.
- o Potential for human intrusion
  - Existence of natural resources at Yucca Mountain

The following is a short summary of these technical issues, many of which have been raised by the States and/or Indian Tribes, and the efforts underway at Yucca Mountain to resolve them.

1. Definition of the Saturated Zone Hydrologic Regime - The level of the water table over an area of 400 square miles has been established. The direction of movement of water, up or down, has been evaluated at several locations. The purpose of this effort is to establish the direction and the rate at which hydrologic conditions may change. We need to estimate the long-term stability of the water table; that is, the potential for it

to rise or fall depending on a change in climate or as a result of a change in the tectonic forces. It is essential to evaluate this to determine whether it is possible for the water table to rise 500 to 800 feet to inundate the repository. In addition, the lateral direction and magnitude of the groundwater flow must be defined to facilitate the evaluation of the site against the EPA standard (40 CFR Part 191).

To resolve these issues, a large number of water wells have been drilled to continually monitor the level of the water table. Correlation of the fluctuation of the water table with other physical events will provide the understanding necessary to make estimates of the long-term stability of water table. Measurements of the hydrologic properties of the formation will provide additional information required to confirm estimates of the amount of water that will move through the formation. Use of tracers in large pump tests will help confirm the estimates of groundwater travel time on the flowpath from the repository to the accessible environment.

2. Potential of Hydrothermal Activity - Deposits of the minerals calcite and silica found at the site are indicators that substantial quantities of water have been present at this location in the past. The major question is the source of the water: Are the mineral deposits the result of precipitation from surface waters evaporating slowly or are they the results of precipitation of minerals from waters from a hydrothermal source deep within the earth? In addition, the time in the past when the formations were created is important for judging whether the phenomena will occur again.

To resolve this issue, the USGS has selected a team of scientists and developed a detailed study plan covering broad interdisciplinary capability to evaluate this formation. Last month, a special peer review panel of independent experts went to the site to see the formations and reviewed the proposed study plan of the USGS. Although the written comments of the panel have not been received, their verbal comments were strongly supportive of the technical approach. We specifically want to note that the State's technical experts were invited and attended the peer review and have been given full access to all the activities and information on this issue.

3. Definition of the Unsaturated Zone Hydrologic Regime - The horizon for the proposed repository was selected in the unsaturated zone because of the absence of standing water. However, this does not mean that the formation is free of water slowly moving through it. While such formations appear dry to the human eye, they contain about a gallon of water per cubic foot of rock. The primary questions to be resolved are: How much of the water that falls on the surface percolates down to the water table; how fast does it move; by what mechanism does it get there; how much water is actively moving through the rock; and how chemically reactive is the water?

To resolve these questions, a two-pronged attack is underway. The first is based on measurements of the hydrologic potential, as a function of depth, in numerous boreholes drilled without the use of water. The second will be measurements of the hydrologic characteristics of the formation from the exploratory shaft.

Eleven different experiments have been developed to measure the hydrologic characteristics of the unsaturated zone in the exploratory shaft facility. I would emphasize that we recently met with the NRC and the State of Nevada to consult with them on the change in configuration of the exploratory shaft. The driving force behind the change is to expand the experimental program to more thoroughly address the technical issues raised by the State and the NRC. The results of the meeting indicate both the NRC and the State supported the changes we proposed. By these changes, we believe that we have been responsive to issues raised by the State and NRC.

4. Definition of the Ground Motion That Could Affect an Operating Repository - Numerous faults exist in the vicinity of Yucca Mountain. Movement along these faults could produce ground motion that would be experienced by the surface facilities as well as the subsurface facilities. The ground motion is far more significant for surface facilities than for subsurface facilities. Before designing the surface facilities, we must know the magnitude and nature of the potential ground motion.

To resolve this issue, it is essential to evaluate the 32 known faults in the 425 square miles that surround the Yucca Mountain site which showed movement in the Quaternary Period (the last 1.8 million years). The USGS will continue its program of surface mapping, geochemical sampling, and geophysical techniques to establish magnitude and time of previous movements. In addition, the USGS will continue to operate the seismic network in the region of Yucca Mountain which was initiated in 1979. We

are currently investigating the need to improve the capability of the network to quantitatively define the magnitude of the ground motion and more accurately pinpoint the location of earthquake epicenters and determine the mechanism causing them. We further plan to involve the State and the NRC in the discussion of the proposed changes in this network and offer the State research team a satellite link so that they will have real time access to data measured in the field.

5. Evaluation of the Effects of Earthquakes and Fault Movements on Waste Isolation After the Repository Is Sealed - The 32 known faults in the 425 square mile area surrounding Yucca Mountain that have shown movement in the Quaternary Period has supported speculation that they could also affect the site's ability to isolate the waste. Some of the faults may be capable of moving tens of centimeters in a single event. Since these events have an average recurrence time measured in tens of thousands of years, there is a likelihood that earthquakes and fault movements will occur within the 10,000 year period after the repository is sealed. After the repository is closed, however, the direct effect of earthquakes and fault movements on waste isolation is expected to be minimal. This is principally because little groundwater is expected to be available to dissolve and move the waste even if a waste canister is damaged. Of more concern is the possibility that fault movements or other tectonic activity might change the current hydrologic conditions of the site. Such changes could conceivably cause the water table to rise, or increase the rate of groundwater movement to the water table.

To resolve these issues, geologic, hydrologic, geochemical and geophysical data will be collected by USGS and Los Alamos National Laboratory to determine the locations of potentially active faults, the time and frequency of their past movements, and to develop descriptive and numerical tectonic and hydrologic models of the Yucca Mountain site. Extensive field and subsurface investigations will be conducted to ensure that the waste storage areas of the repository do not intersect potentially active faults. A committee of independent experts in tectonics and seismology has been assembled and has been working with the Project for more than a year to define these potential problems and to recommend a research program to resolve the issues.

6. Evaluation of Potential for Future Volcanic Activity at the Site- The possibility of future volcanic activity at the Yucca Mountain site is suggested by the past geologic history of southern Nevada: volcanic rocks are abundant in the area. In fact, Yucca Mountain, including the strata of the proposed repository, is made up of rocks formed from volcanic activity that occurred 12 million years ago. In addition, more recent basaltic volcanic activity, occurring during the past two million years, has produced several small basaltic cinder cones in the vicinity of Yucca Mountain. The major concerns regarding the potential for renewed volcanism include the possibility of direct disruption of the repository by volcanic activity, and the possible effects of future volcanism on the hydrologic conditions at the site.

To address these concerns, the USGS and Los Alamos National Laboratory have been conducting extensive field work, drilling and sampling, isotopic age dating and geochemical analyses to determine the origins of the basaltic cinder cones and their eruption frequencies in order to calculate the probabilities of future volcanic activity that might affect waste isolation. The data collected thus far indicate that volcanic activity in the region occurs infrequently and poses no significant hazard. In fact, estimates of annual probability for a local volcanic eruption, based on this preliminary data, range from one chance in a million to one in 10 million per year. Future investigations are planned to increase our understanding of regional volcanic processes and to further refine these preliminary results, especially in the determination of the time and frequency of eruption of the youngest volcanic deposits.

7. Existence of Natural Resources at Yucca Mountain - It is important to evaluate the potential for natural resources, such as minerals and hydrocarbons, at the Yucca Mountain site because of the possibility they could stimulate future human intrusion into the repository during exploration and exploitation. In addition to determining if resources exist at the site, it is equally important to determine if the geology of the site might be conducive to future exploration, regardless of the actual presence of resources. Future exploration activities, such as exploratory drilling, could disrupt the repository enough to cause release of radionuclides if they were to occur in the 10,000 years after the repository is closed.

To resolve this issue, a systematic evaluation for mineral and energy resources will be conducted during site characterization. Detailed chemical analyses of rock samples from holes drilled and from the surface will be performed for specific metallic and "indicator" elements; geophysical studies will be conducted to assess the potential for future exploration; and grade and tonnage will be calculated for specific commodities to ascertain the potential for their exploitation. The hydrocarbon potential of the older (that is, Paleozoic) sedimentary rocks which occur deep beneath Yucca Mountain will be evaluated from their surface exposures elsewhere and from calculations of heat-induced changes, based on the depth of the sediments and the geologic history of the area. The State is conducting an independent study of the mineral resources in the vicinity of Yucca Mountain which the NNWSI Project and the Nevada Operations Office is supporting and facilitating.

Status of Site Activities

The site characterization phase officially began on May 28, 1986, with Presidential approval of the Yucca Mountain site. Since that time, the major effort of the NNWSI Project has been the development of a Site Characterization Plan (SCP), which provides three things: (1) an extensive document describing the current state of knowledge of the site; (2) identification of, and DOE's strategy for, resolving technical and regulatory issues; and (3) the technical activities to be conducted to characterize the site. DOE's current plans are to release the SCP later this year to NRC, the State of Nevada, and the public

for review and comment. This will be the culmination of many years of intensive effort to understand and address the issues surrounding the selection of this site as one of the candidates for the nation's first high-level nuclear waste repository. More than 100 Study Plans augmenting the SCP must be prepared to provide the NRC and the State with specific details about the testing program prior to initiating field activities.

Many investigations which began prior to Presidential approval of the site for site characterization, have continued uninterrupted into the site characterization phase. Hydrologic, seismic and meteorologic monitoring programs are in place.

Stop-work orders initially imposed by the NNWSI Project's own Quality Assurance (QA) organization have been almost completely rescinded. The stop-work orders were issued by management to assure that the scientists and engineers supporting the technical program properly document their work to guarantee its maximum credibility in the licensing forum. Project participants were required to prepare QA Level Assignments and supporting Scientific Investigation Plans for each of their activities and submit them for DOE approval.

Although the stop-work orders have been largely rescinded, most scientific field activities will continue to be held in abeyance pending completion and issuance of the Site Characterization Plan and the preparation, review and approval of more than 60 study plans. We expect the step-by-step resumption of all activities within the year after the SCP is released and study plans are formally approved.

State and Local Interactions

In addressing this point, I would like to divide the discussion into two segments: (1) interactions dealing with governmental organizations of the State and local communities; and (2) interactions with citizens.

The intention of the NNWSI Project is to work in a cooperative and positive manner with the State to facilitate their oversight responsibility that was assigned by the Congress. Proposals by DOE to initiate Consultation and Cooperation Agreement negotiations extended to the State have been continuously rejected. The State has indicated that full funding of its grant request is one prerequisite for initiation of C&C Agreement negotiations. Despite the views expressed by the State regarding our handling of its grant, we believe we have made a very strong effort to effectively represent the State's grant request through the Federal budget cycle. Since 1983, we have provided more than $15.3 million to the State in response to its grant requests. This amounts to 80 percent of the amounts requested by the State. The Project Office has approved the grant requests in a professional manner and has not denied any grant requests for properly fundable activities. It is interesting to note that for 1987, the State's grant request was $10.14 million; the Governor's request to the State legislature for grant spending authority for funds received under the grant was only $8.4 million; and the Legislature finally approved $8.3 million. With our recent review of the supplemented grant request, the state will receive a minimum of $8.4 million this year.

Since 1984 we have worked cooperatively with the state in numerous and effective forums. We have invited them to the monthly two-day NNWSI Project management meeting; offered office space in the field near Yucca Mountain for state scientists; established a protocol for State contractor access to the Nevada Test Site; arranged for the State's contractors to tour the Yucca Mountain site; provided state counsel with access to Project files for purpose of discovery; participated with the state's informal working group in numerous meetings and workshops; participated as observers in the peer review of the state's socioeconomic studies; responded to the State's request for access to the NNWSI Project's computerized media-reference system for newspaper and magazine clippings; provided comments to the State on its draft public information factsheets and periodic newsletters; periodically participated in county commission meetings for Clark, Nye and Lincoln counties; testified before the State's legislative Committee on High-Level Radioactive Waste and the state's Commission on Nuclear Projects; provided background information and facts to the legislative committee on request; and organized an extensive tour of the WIPP site for Nye County officials and Nevada Commission on Nuclear Projects.

Similarly, our interactions with the general public have been of a wide ranging and positive nature. We have worked with citizens from the three counties and eight communities near Yucca Mountain. We have an active speaker's bureau that provides presentations to local service organizations. The Nevada Operations Office holds town meetings on a monthly basis

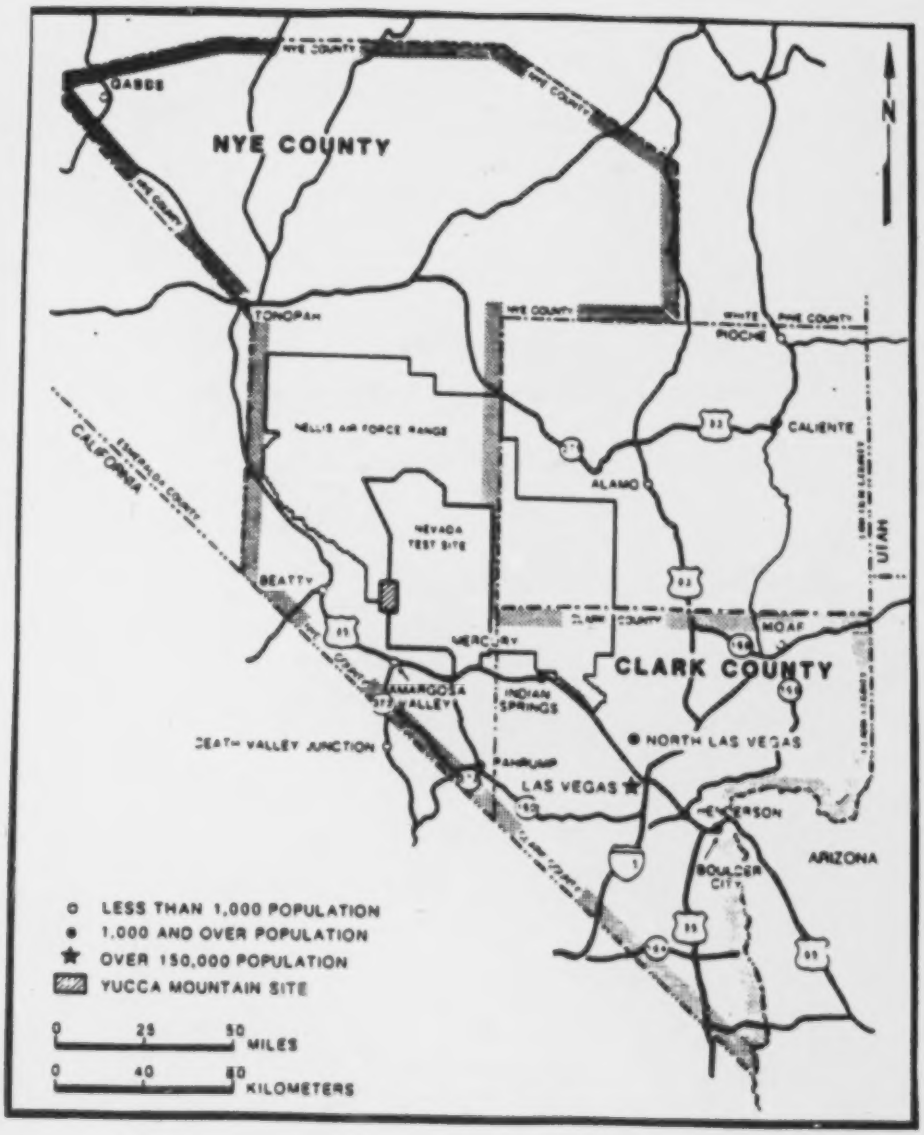
throughout the State and the repository program is a prominent subject of the meeting. We have given the news media full access to information about the program. We have responded to media requests to appear on public service programs and newscasts. By far our most effective interaction is the tour program we conduct at the Nevada Test Site. Here we can present a complete view of the Yucca Mountain site as well as tours of such facilities as Climax and G-tunnel which are analogous to a repository. Between 1983 and the present, more than 12,000 persons have taken this tour. These visitors have been quite responsive.

With that last comment, I would like to close my testimony, express the hope that I have adequately addressed the points of interests and offer to answer any question that may remain about our efforts at Yucca Mountain. Mr. Chairman, I would be happy to answer any questions you or other members of the Committee may have now or after my colleagues present their testimony.

Attachment A

STATE OF NEVADA

Attachment B



STATEMENT OF

JOHN H. ANTTONEN, PROJECT MANAGER

BASALT WASTE ISOLATION PROJECT

U.S. DEPARTMENT OF ENERGY

RICHLAND OPERATIONS OFFICE

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

JUNE 29, 1987

Mr. Chairman and Members of the Committee:

My name is John Anttonen and I am the Project Manager for the Basalt Waste Isolation Project (BWIP) at the Department's Richland Operations Office. The responsibilities of my office are to manage the day-to-day activities of the site suitability investigations of the basalt formations at the Hanford Site, a Department complex that is involved in a variety of national missions, including defense materials production, nuclear energy research, and radioactive waste management.

In my prepared comments today I would like to touch upon four specific subject areas relating to the BWIP program and then I would be happy to answer any questions you might have. The topics I will cover are: (1) historical aspects; (2) site specific technical issues and how they will be addressed during site characterization of the basalt site at Hanford; (3) current project status and; (4) institutional interaction. For clarity, I have attached several charts to my statement.

Historical Aspects

In the 1950's, a panel of the National Academy of Sciences (NAS) began studying the problem of how to dispose of radioactive nuclear waste. Ultimately, deep geologic disposal was agreed upon as the preferred method.

During the 1960's and 1970's, the Atomic Energy Commission, a predecessor to the Department, Hanford contractors, the international scientific community, the National Academy of Sciences (NAS), and later the Nuclear Regulatory Commission and DOE conducted sessions to consider recommendations for long-term

storage and disposal of defense wastes stored on the Hanford Site. A number of boreholes were drilled on the site and, along with an existing deep borehole at the Site, were used to assess the basalt flows underlying the site. Analysis of the data from the core samples collected provided a methodology for identifying basalt flows deep below the surface and resulted in development of a map of the geology beneath the Hanford Site. (See Attachment A)

In 1976, the National Waste Terminal Storage Program was formally established to consider terminal storage of commercial radioactive wastes and funded a study to further review and evaluate the work done at Hanford on the basalt flows. A year later, studies were completed on the capability of the basalts at Hanford to isolate radioactive waste from the environment. The findings reinforced earlier conclusions that basalt was a potential media for the isolation of radioactive wastes.

In 1978, the National Waste Terminal Storage Program was restructured and expanded to meet the specific needs of commercial waste management. As part of this expanded program, the Basalt Waste Isolation Project was established and a site identification study was started to identify a preferred site for a nuclear waste repository in the basalts at Hanford. Also, research efforts were carried out relative to groundwater content and movement within the basalts, seismic characteristics of the site, depth and consistency of candidate basalt flows, and other factors that would weigh on the potential for using the Hanford Site for a repository.

Screening of potential basalt sites at Hanford was completed in 1980, and the Reference Repository Location was identified as a preferred site at Hanford. A site for construction of an Exploratory Shaft Facility was selected and authorization was given to construct the principal borehole for the shaft in 1982. (See Attachment B)

Following passage of the Nuclear Waste Policy Act by Congress in 1982, the character of the program changed. The Hanford Site was one of nine sites identified as a potentially acceptable site for the first geologic repository.

Although at the time of passage of the Act BWIP was prepared to begin drilling an exploratory shaft, the Department concluded that BWIP should be consistent with the activities at the other candidate sites. DOE elected not to initiate drilling of an exploratory shaft until the candidate site selection process leading to detailed site characterization had been completed and only then if Hanford was among the selected sites. The process included issuance of siting guidelines, preparation and issuance of the draft and final environmental assessments on each of the candidate sites and the Presidential site characterization decision of May 1986.

Site Specific Technical Issues and How They Will be Addressed

In preparation for drilling the exploratory shaft in 1982, and in accordance with NRC regulations, a Site Characterization report was prepared and issued. This report documented what was known about the site and defined the plans for investigating the site to determine whether it was suitable for a repository. That

report received critical review by the NRC, the USGS, the State of Washington, the scientific community and others. Through consideration of these comments and subsequent reviews, a consensus has been reached relative to the issues that need to be addressed if the site at Hanford is to be considered suitable for a repository. The BWIP Site Characterization Plan, which we expect to distribute for review and comment later this year, will detail the specifics of how we will address the technical issues.

The major issues raised by States, affected Indian Tribes and the DOE technical community that I would like to discuss today are: Hydrology of the Hanford basalt; Geology in the Reference Repository Location; and repository constructability.

o The hydrology of the Hanford basalt:

The basalt flow that is the focus of our studies is located about 3,000 deep. The rock is below the water table and is saturated. Understanding how this very deep groundwater system operates is one of the key technical issues for BWIP.

To determine the direction and rate of water movement in the deep underground, we will conduct multiple tests, including large scale testing that will measure the hydraulic properties of the rock over several miles. This type of testing will provide information about possible and likely flow paths for groundwater. Other smaller scale tests will provide the statistical data we will need on rock and water properties to better understand the changes in rock properties throughout the site.

Hydrologic testing in the Exploratory Shaft Facility will give specific information about the properties of the actual

layer of rock that would house a nuclear waste repository. The testing will give specific information on the vertical movement of water away from the repository. We are meeting with project participants to come to an agreement on the hydrology testing approach and the methods to be used. We have already reached general agreement on testing required before sinking the exploratory shaft.

o Geology in the Reference Repository Location:

Since the repository must be capable of performing for thousands of years, we must understand the geology of the region so that future changes would not be likely to provide a pathway for release of the radioactive materials to the environment.

The basalt beneath the site is millions of years old and was formed by floods of liquid rock that eventually cooled to a solid. Over 70 individual layers have been identified and range between 30 and 300 feet in thickness. The particular flow we are looking at is the Cohassett flow which is about 250 feet thick and approximately 3,000 feet below the surface.

Previous investigations of the site have shown that the region in and around the Hanford Site has low-to-moderate potential for earthquakes and is tectonically quite stable. The area appears to have a very slow deformation rate in the hills and small mountains in the region, which has been ongoing for approximately 20 million years. Investigations based on deep and shallow borehole information, exploratory shaft testing and other work will provide the geologic evidence we need to formulate models of how the area will be altered over the years by the geologic movement.

We will also do extensive work on seismic aspects of the geology to develop a complete picture of earthquake potential and the possible impacts we could expect during and after repository construction, operations, and closures.

o Repository Constructability:

As I indicated earlier, the region around Hanford is experiencing slow, ongoing geologic deformation. This deformation causes relatively high stresses in the undeformed rock in the region we are investigating. This state of stress in the rock must be quantified and understood to assure that the repository tunnels deep underground will remain stable and safe to work in during construction and operation of a repository.

The construction of the Exploratory Shaft Facility to investigate the deep basalts will provide information necessary to assess and resolve constructability questions and provide data needed for design of the facility. Testing in basalt at the Near Surface Test Facility tunnels in a basalt outcropping at Hanford has provided valuable information for the design of a repository.

This information will be confirmed in the Exploratory Shaft Facility and additional data obtained to optimize the repository design.

Current Project Status

During the investigation phase of BWIP leading up to the current site characterization phase, significant information has been developed, including:

- Geologic and hydrologic information obtained from surface and borehole investigations.
- Seismic and tectonic information from surface and borehole instrumentation.
- Rock mechanic information from laboratory and thermal-mechanical testing at the Near Surface Test Facility.
- Waste form performance and release rates from radioactive and non-radioactive waste form-basalt rock-groundwater interaction tests.
- Conceptual designs for the waste package and a repository in basalts.
- Performance models and assessments of potential waste package and repository releases.

Although this information is preliminary, it does form a good basis for establishing the program necessary for developing technical conclusions regarding the suitability of a repository at Hanford for isolating nuclear waste from the accessible environment.

For the past two years, BWIP has been working on the preparation of a Site Characterization Plan (SCP) and this effort is nearing completion. Work on the Plan has escalated during the past year and occupies much of our efforts today. The Plan, as I indicated before, will be the master plan for conducting detailed site characterization at the Hanford Site. The document will discuss two basic topics: What is known about the site today based on all the testing conducted to date, and what the testing program will be over the course of detailed site characterization. We expect to issue the Plan to the NRC and for

formal public review and comment later this year. After the Plan has been reviewed and comments received and resolved, sinking of the exploratory shaft may proceed. In the meantime, ongoing and critical path activities are proceeding, based on preliminary plans.

Construction of the Exploratory Shaft Facility is the next major activity following finalization of the SCP. But before that work can proceed, we must complete some major hydrologic testing to obtain data on conditions that would be disturbed by construction of the Exploratory Shaft Facility. In recent months, we have developed plans and conducted discussions with program participants regarding the pre-exploratory shaft hydrology program. As I indicated previously, we have reached agreement on many of the major aspects of the testing program. We are continuing work on that phase of the characterization process.

During the past year, BWIP has focused on quality assurance and management issues which are necessary for large NRC licensed projects. In May 1986 the Department issued a Stop Work Order to the integrating contractor because of problems in these areas. Upgrades have been implemented and a partial lift of the Stop Work Order was issued this month. At this time, work is proceeding under controlled conditions. A full lifting of the Stop Work is expected later this year.

Institutional Interactions

The Nuclear Waste Policy Act of 1982 identified how affected States and Indian Tribes would be involved in the siting process

for a high-level radioactive waste repository, as well as other agencies with an interest in the program. Sections 116 and 117 of the Act identify the interactions required by the Department. BWIP has been very active in this regard and we have worked extremely hard to include the participating groups in all steps of the process.

For BWIP, the States of Washington and Oregon, and the three affected Indian Tribes--the Yakima Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation and The Nez Perce Tribe--are actively involved in monitoring the program and providing comments on a regular basis. This has included regular briefings for the State of Washington since 1983. In addition, we have initiated similar briefing schedules for the affected Indian Tribes.

The formal briefings cover current topics of interest to the participants and allow us to keep them up to date on the status of the project and what to expect as each element moves through the preparation process and into implementation. An example of this is the Site Characterization Plan currently being written.

As portions of the Plan are completed in advance draft form, copies are being provided to the participants, and explained as requested, so they may review the material in a timely manner.

I would like to expand on the interactions we conduct with the affected parties. BWIP conducts quarterly meetings with the participants to update them on program status and activities and the BWIP Division Manager meets weekly with the NRC and Tribal on-site representatives, and representatives of the State, to discuss and resolve pending issues relevant to the program. I

personally sit down monthly with the States' and Tribes' high-level radioactive waste program managers to go over the status of the program and, again, discuss the issues. In addition, the States and Tribes participate in all project technical meetings with the NRC and these meetings are open to the public and media. Furthermore, topical meetings have been held and will continue to be held at the request of the States and Tribes. We feel that through this approach we have developed a sound working relationship with the participants.

To facilitate timely and easy access to the BWIP process, we have worked with the affected Indian Tribes to provide for an on-site representative who has access to my staff and the contractor staff, and to the study zones on the Hanford Site. The State of Washington is working toward having an on-site representative at Hanford as well. The complexity of the project requires on-site access and we welcome the opportunity to provide such service.

The Act, under section 116, allows for financial assistance to the affected States and Indian Tribes in the form of grants. The grants are designed to assist the affected parties in reviewing the program to determine potential economic, social, public health and safety, and environmental impacts of a repository on the State, Indian lands or the residents. BWIP has responsibility for grant awards to affected parties connected with our project.

The following is a list of the grantees and the level of funding. This represents the cumulative totals through Fiscal Year 1986. Attachment C provides a brief description of the scope of each grant.

- The State of Washington Department of Ecology - $10.3 million.
- The State of Washington's Legislature - $1.5 million.
- The State of Oregon - $.5 million
- The Yakima Indian Nation - $5.8 million
- The Confederated Tribes of the Umatilla Indian Reservation - $2.8 million
- The Nez Perce Indian Nation - $2.9 million

Since 1983, BWIP has granted $23.8 million in grants to affected parties for conducting their oversight programs. Let me point out here that the scope of involvement ranges through a variety of institutional and technical areas, including but not limited to policy review, technical review, public involvement, legislative information, and direct interaction with DOE and the Richland Operations Office and project contractors.

The proximity of the Columbia River to the Hanford Site and its eventual flow west along the northern Oregon border have generated considerable interest on the part of that state. Oregon, while not having direct affected status under the Act, nevertheless is an interested party. As mentioned earlier, to facilitate their involvement in the program, DOE is currently providing $500,000 a year in funding for five years under a separate Congressional budget authorization. As such, we include Oregon as a project participant and consider their comments and concerns to be important to the BWIP program.

Seeking to negotiate Consultation and Cooperation (C&C) Agreements is spelled out as a requirement in the Nuclear Waste Policy Act, and BWIP has initiated "C&C" discussions with the

affected parties. We have been negotiating "C&C" agreements with the State of Washington since 1983. Tribal discussions began in 1983 with the Yakima Indian Nation and with the Confederated Tribes of the Umatilla Indian Reservation in 1985. Discussions with the Nez Perce Tribe began this month.

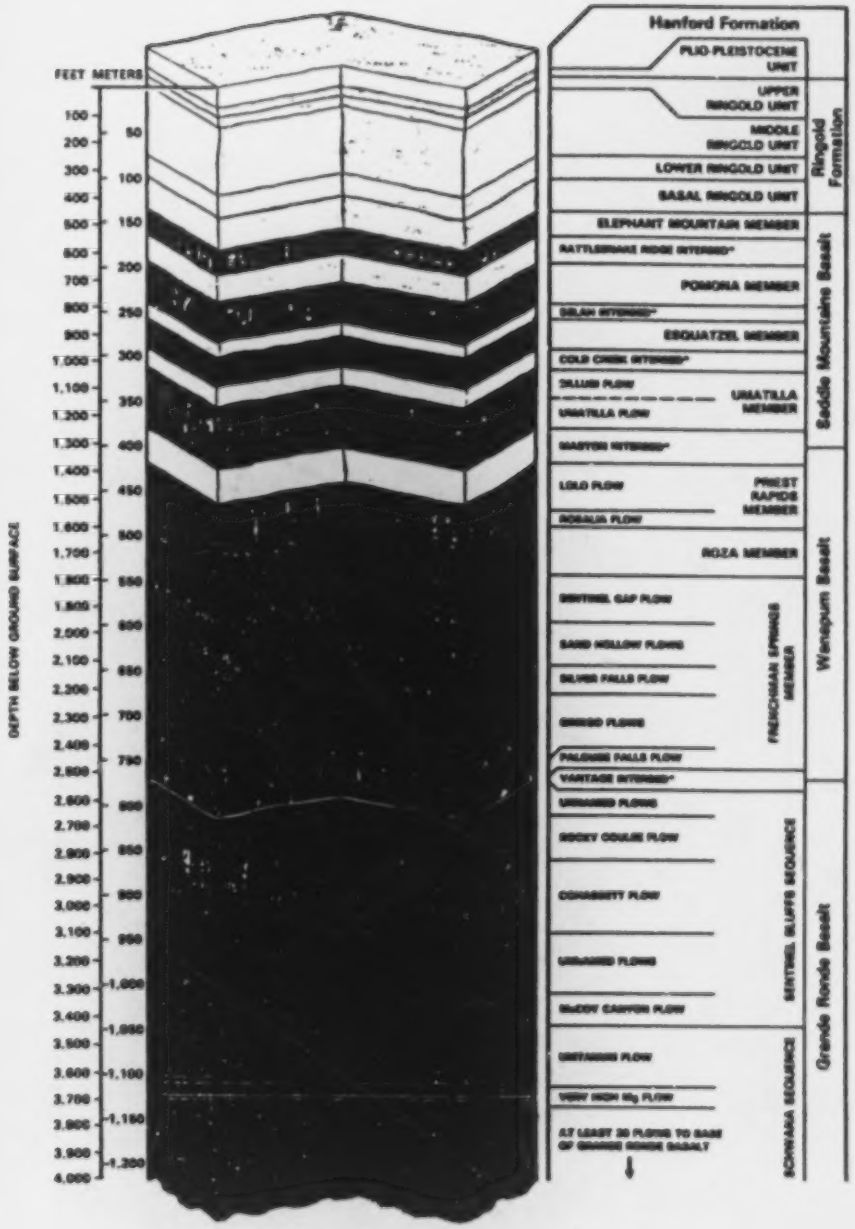
The Nez Perce Indian Tribe is the only affected party with which we are currently negotiating a C&C agreement; however, offers to resume negotiations have been extended to all affected parties.

The public's involvement is also important to the site characterization and selection process. When the draft Environmental Assessments were issued in December 1984, the Department followed up early in 1985 with a series of public meetings throughout the northwest to receive comments. In the two years following, we have conducted a large number of public interactions, including site tours at Hanford for governmental officials, the media and the general public. Our speakers bureau has been very active in both Washington and Oregon, presenting the program in a variety of public settings.

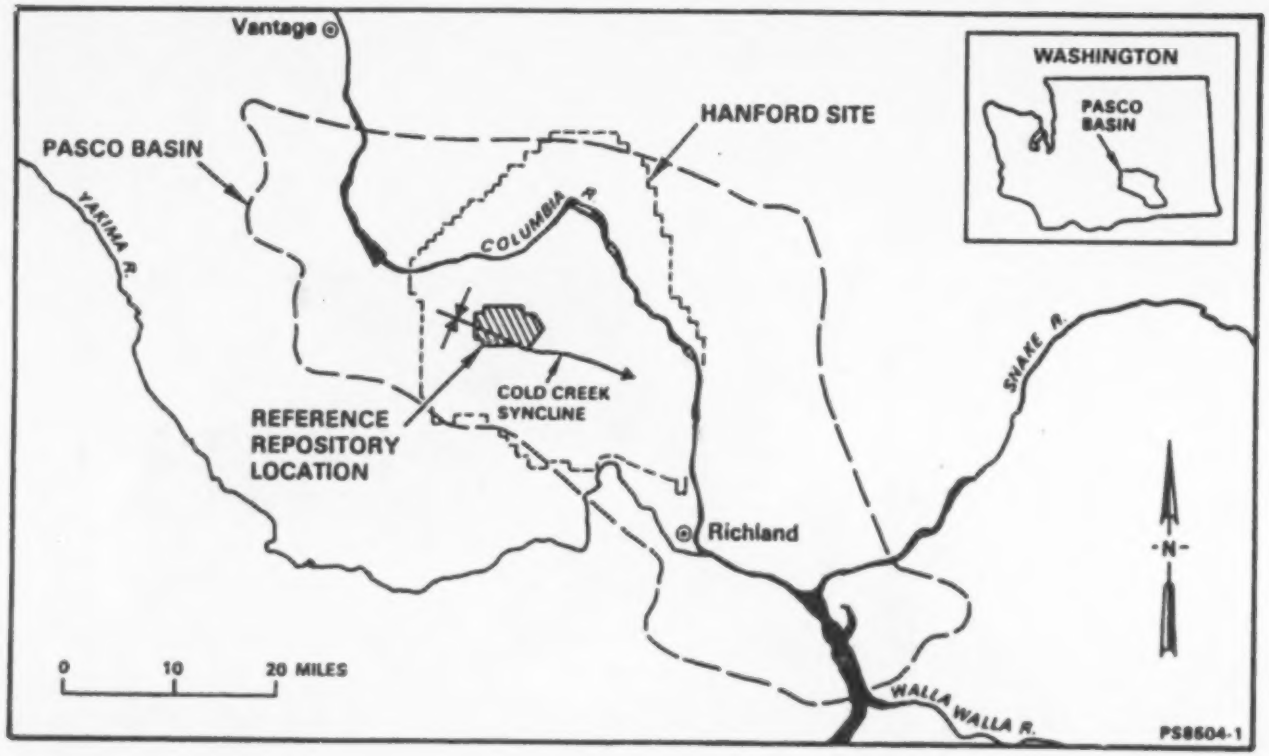
When the Site Characterization Plan is issued, our public interactions will increase. In conjunction with formal release of the plan for public review and comment, we will be scheduling a series of workshops and formal public hearings to explain the Plan, discuss it with interested parties and receive their input for inclusion in the Plan updates which will be issued semi-annually.

This concludes my statement. I would be happy to answer any questions you may have about the BWIP project.

Attachment A



LOCATION MAP



76-701 0 - 87 - 6

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

NUCLEAR WASTE BOARD - NUCLEAR WASTE ADVISORY COUNCIL

- PROGRAM PARTICIPANT SINCE 1983
- $10,341,000 CUMULATIVE FUNDS AUTHORIZED TO DATE

SCOPE OF INVOLVEMENT

POLICY REVIEW

- MISSION PLAN
- SITING GUIDELINES
- COMMINGLING STUDY
- SITE CHARACTERIZATION PLAN
- CONSULTATION AND COOPERATION
- LEGAL ANALYSIS
- SOCIOECONOMIC PLANNING AND DATA GATHERING
- ENVIRONMENTAL PLANNING AND DATA GATHERING

TECHNICAL REVIEW

- HYDROLOGY
- GEOLOGY
- TECTONICS
- TRANSPORTATION

PUBLIC INVOLVEMENT

- MEDIA
- NEWSLETTER
- READING ROOM & SERVICE CENTER
- FACT SHEETS
- SLIDE SHOWS
- PUBLIC WORKSHOPS
- PUBLIC HEARINGS
- CITIZEN SURVEYS

Attachment 2

STATE OF WASHINGTON LEGISLATURE

- **PROGRAM PARTICIPANT SINCE 1984**
- **$1,518,000 CUMULATIVE FUNDS AUTHORIZED TO DATE**

SCOPE OF INVOLVEMENT

LEGISLATIVE INFORMATION

- NEWSLETTER
- WORKSHOPS
- CONFERENCES
- LEGISLATIVE ACTION FILE
- TOURS

SUPPORT TO RADWASTE SUB-COMMITTEES AND LEGISLATIVE MEMBERS OF NUCLEAR WASTE BOARD

- REPORTS AND BRIEFINGS
- RESEARCH

STATE OF OREGON
OREGON DEPARTMENT OF ENERGY

- PROGRAM PARTICIPANT SINCE 1985 (THRU STATE OF WASHINGTON)
- $500,000 PER YEAR FOR 5 YEARS (STARTING IN FY 1987)

SCOPE OF INVOLVEMENT

POLICY REVIEW

- SITE CHARACTERIZATION
- SITE CHARACTERIZATION ENGINEERING STUDY PLANS
- MISSION PLAN

TECHNICAL REVIEW

- HYDROLOGY
- GEOLOGY
- TECTONICS
- ENVIRONMENTAL
- TRANSPORTATION

PUBLIC INVOLVEMENT

- MEDIA
- PUBLIC WORKSHOPS
- PUBLIC INFORMATION
- SPEAKERS BUREAU

YAKIMA INDIAN NATION
NUCLEAR WASTE PROGRAM

- PROGRAM PARTICIPANT SINCE 1983
- $5,766,000 CUMULATIVE FUNDS AUTHORIZED TO DATE

SCOPE OF INVOLVEMENT

POLICY REVIEW

- MISSION PLAN
- SITING GUIDELINES
- COMMINGLING STUDY
- CONSULTATION AND COOPERATION
- LEGAL ANALYSIS
- TOURS

TECHNICAL REVIEW

- HYDROLOGY
- GEOLOGY
- HYDROCHEMISTRY
- GEOCHEMICAL

PUBLIC INVOLVEMENT

- NEWSLETTER
- WORKSHOPS
- LIBRARY
- MEDIA
- HEARINGS

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION NUCLEAR PROGRAMS OFFICE

- PROGRAM PARTICIPANT SINCE 1984
- $2,817,000 CUMULATIVE FUNDS AUTHORIZED TO DATE

SCOPE OF INVOLVEMENT

POLICY REVIEW

- MISSION PLAN
- SITING GUIDELINES
- DRAFT ENVIRONMENTAL ASSESSMENT
- SITE CHARACTERIZATION PLAN
- CONSULTATION & COOPERATION AGREEMENT
- LEGAL ANALYSIS

TECHNICAL REVIEW

- GEOLOGY
- HYDROLOGY
- RISK ASSESSMENT
- TRANSPORTATION

TRIBAL ACTIVITIES

- LIBRARY
- WORKSHOPS
- NEWSLETTER
- MEDIA
- HEARINGS
- SOCIOECONOMIC PLANS AND DATA
- ENVIRONMENTAL PLANS AND DATA

NEZ PERCE INDIAN NATION
NEZ PERCE NUCLEAR WASTE POLICY ACT

- PROGRAM PARTICIPANT SINCE FY 1985
- $2,876,000 CUMULATIVE FUNDS AUTHORIZED TO DATE

SCOPE OF INVOLVEMENT

POLICY REVIEW
- MISSION PLAN
- SITING GUIDELINES
- DRAFT ENVIRONMENTAL ASSESSMENT
- SITE CHARACTERIZATION PLAN
- CONSULTATION & COOPERATION AGREEMENT
- LEGAL ANALYSIS

TECHNICAL REVIEW
- REGIONAL IMPACT STUDIES
- TRANSPORTATION
- EMERGENCY RESPONSE

TRIBAL ACTIVITIES
- LIBRARY
- NEWSLETTER
- MEDIA
- HEARINGS
- WORKSHOPS
- SOCIOECONOMIC PLANS AND DATA
- ENVIRONMENTAL PLANS AND DATA

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY

BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JULY 16, 1987

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the Department of Energy's comments on four legislative proposals relating to nuclear waste that are under consideration by your Committee.

By way of perspective, I understand that more than 30 bills have been introduced in the 100th Congress that would affect nuclear waste storage, transportation or disposal. Each of these bills would, to one extent or another, alter the course of the U.S. nuclear disposal program presently underway. This being the case, it may be worthwhile to begin with a few introductory observations:

First, our confidence in the basic principles and blueprint formulated by Congress via the Nuclear Waste Policy Act of 1982 (NWPA) continues unabated. We believe that permanent geologic isolation, deep underground, in solid rock formations coupled with integral Monitored Retrievable Storage is an excellent choice.

Second, spent fuel and high-level waste continues to accumulate and the need for disposal grows. It seems to me that the objectives of the NWPA remain valid and urgent.

Third, thus far technical progress has been encouraging in spite of the difficulties in working with the affected parties. The key milestone was the President's approval last year of three sites for detailed study, testing and characterization.

As you evaluate new ideas or revisions to the NWPA, I am confident that improvements can be made. When or if improvements are desirable, we can hopefully find ways to adopt new approaches which do not abandon good work previously accomplished. The positive steps already taken are too important to derail, disrupt, or destroy. Previous research has been validated and verified by peer reviews. There is no objective reason to discard previous findings only to retrace the same steps anew. For the past 25 years, the national laboratories and scientific community have been researching nuclear waste disposal. It is doubtful that another decade or another billion dollars spent on research and generic studies on nuclear waste will answer the questions that must be answered. Only a comprehensive regimen of field investigations and testing can do this. And, we have finally begun.

We have known all along that locating a repository anywhere will involve tough societal and technical choices not casually resolved. We demand a strong national defense and plentiful electricity to power our factories and light our homes while insisting that the resultant waste is someone else's responsibility. Mr. Chairman, your recent proposal S. 839, co-sponsored by Senator McClure, is certainly a worthwhile attempt to make the siting of waste facilities more attractive in terms of economic benefits. In the ebb and flow, the give and take, my primary concern is that we must be extremely cautious to not give up important and rigorous program elements mandated by the NWPA unless we are sure we have something better.

The reason why the mission must be accomplished expeditiously and without further vacillation is obvious to the naked eye--inventories of commercial spent nuclear fuel and of high-level wastes created as national defense by-products, continue to accumulate. We can't wish them away; they are here with us today as they have been for decades. But with more than 100 large central station nuclear power reactors now in service, spent fuel storage pools are filling rapidly. Our solution to date has been to buy time: Reactor storage basins and temporary holding tanks in a hundred separate locations in 33 States. It was never intended that private companies in the U.S. would dispose of nuclear waste. The U.S. Government has always assumed that responsibility -- and yet, despite $2.8 billion already paid by utilities for this disposal service, many would have us renege on prior commitments and begin anew working toward yet another "solution" the future of which no one can predict. Mr. Chairman, and distinguished members of this Committee, given the progress we have made, that would just not be a fair or prudent way to do business. We would not tolerate such an approach in our own private business ventures and we should not impose it here.

I would not want to leave the impression that there is immediate danger with the status quo. The Nuclear Regulatory Commission has affirmed that the present at-reactor fuel storage pools are adequate to protect the public while we move toward a permanent solution. But, the real question may be: are we determined to keep moving? I see evidence that many States,

utilities, and private citizens think that we must. Unfortunately, there are also those who do not wish us success--or who would permit progress only on their terms.

I have appended to my testimony three tables which pointedly demonstrate the national character of this dilemma:

Thirty-three States already have growing inventories of nuclear spent fuel or will have by the year 2000.

(Table 1)

Four States are temporarily storing high-level wastes created by national defense programs and a former commercial reprocessing facility.

(Table 2)

A map showing the geographic distribution of spent fuel and high-level waste.

(Table 3)

The problem is still squarely before us. We have a workable solution--not perfect but workable. When one reviews the 40 year history of waste disposal, he is led to ask if not now, when?

I appreciate the Committee's indulgence in allowing me to digress slightly from the immediate task at hand--to comment on the four bills before you for action. But, I believe that this type of historical review provides helpful background as we begin to delve into specific recommendations for change.

Now, I am pleased to offer the Department's general summary and observations on the pending bills:

S. 1211 NUCLEAR WASTE REPROCESSING STUDY ACT OF 1987

Sponsor: Senator Hecht

Key Provisions:

The stated purpose of this bill is to initiate an analysis by the National Academy of Sciences (NAS) of the feasibility of reprocessing spent fuel "before the Federal Government invests substantial amounts of additional ratepayer funds on the deep geologic disposal of spent nuclear fuel." All site specific work on potential repositories would be suspended while NAS studies the feasibility of reprocessing. The moratorium would freeze any further site investigations until the year 1990.

Commentary:

When Congress considered nuclear waste disposal options, the question of reprocessing was considered. It was determined that resolving the nuclear waste disposal issue would be further complicated by adding to it the many national policy issues raised by reprocessing. It was decided by the Congress to keep the two issues separate in order to move to a much needed solution on nuclear waste. We continue to believe that was the correct choice.

Another consideration is the limited design impact that reprocessing would have on a high-level waste repository. While it is indeed true that certain elements would be removed and that volume reductions would provide some benefit, the main consideration in designing the repository

is heat load which would be only minimally affected. The President's October 8, 1981, statement on nuclear energy stated that reprocessing is a decision that should be made by the private sector based on market forces. At the present level of uranium prices, the reprocessing of spent nuclear fuel is not an attractive option. Meanwhile, the waste program can and will be capable of disposing of both spent fuel and high-level waste from reprocessing.

S. 1007 TO AMEND THE NUCLEAR WASTE POLICY ACT OF 1982

Sponsor: Senator Hatfield

Key Provisions:

Any State lying contiguous to a major river or waterway or above an underground aquifer, adjacent to, or above which a repository is proposed to be located would have all the same rights and opportunities to participate in the site selection, review and approval process established by the NWPA as the State in which the repository is proposed to be located.

COMMENTARY:

At the time NWPA was under consideration, the rights of States to participate in the siting process was given thorough consideration by the Congress. We believe that the balance that was struck is a good one.

DOE provides a variety of opportunities for the public and officials of non-host States and Tribes to participate in implementation of the NWPA. Such opportunities have

included public meetings with State, Tribal and local officials, public hearings on the Environmental Assessments, public briefings, meetings with Governors and key officials, community briefings and tours of DOE facilities. In addition to these direct contacts, the National Conference of State Legislatures (NCSL) and the National Congress of American Indians (NCAI) have signed cooperative agreements with DOE to supplement our communication with all 50 States and 150 Indian Tribal governments.

S. 1141 NUCLEAR ENERGY WASTE POLICY ACT OF 1987

Sponsor: Senator Hecht

Key Provisions:

The bill would amend the NWPA to require that spent fuel discharged from a reactor core must be stored for 50 years before it can be transported to a repository.

Commentary:

This bill is similar to S. 1211 in that it would impose a moratorium on disposal of nuclear waste in a repository in anticipation of eventual reprocessing. We can find no particular technical merit in the proposition. Technical analysis indicates that spent fuel removed from the reactor core declines in heat by 60 percent after five years. After 25 years, the heat decline is about 90 percent. A substantial amount of the spent fuel projected to be emplaced in the first repository will already have been cooled for two to three decades. Therefore, relatively little additional cooling benefit would be gained from

lengthening the temporary storage time to 50 years. Moreover, the bill would permit shipment to an MRS during the 50 year cooling period-- but not to a repository.

S. 1266 HIGH-LEVEL RADIOACTIVE WASTE STORAGE ACT OF 1987

Sponsors: Senators Evans, Murkowski, Hecht

Key Provisions:

The bill would halt until the year 1998 all permanent repository activities (siting, construction, planning and any other activity). In place of a repository, the bill would authorize construction of four regional MRS facilities. The Secretary of Interior would, during the suspension period, conduct a national survey and prepare a list of potential repository sites. DOE would conduct a survey on the need for a second geologic repository. Each of the four States or Tribes agreeing to accept an MRS would receive $100 million per year in payments from the Nuclear Waste Fund. States would be given authority to regulate transportation.

Commentary:

The Department does not believe it would be in the national interest to suspend all work on the development of a permanent repository. Again, this was one of the key issues debated during the legislative discussions leading to passage of NWPA. Congress determined that the legislation should be carefully crafted to insure that an MRS facility not become the defacto permanent repository. The

Department, still sensing this potential, included in the MRS proposal a provision that Congress tie the opening of the MRS to receipt from the Nuclear Regulatory Commission of a construction permit to begin constructing the permanent facility. While we have obviously not developed complete cost information on this bill, it would appear to increase total system life-cycle costs by $24 billion to a new level of $56 billion. The cost increase derives principally from the $100 million per year payments to each of the four States accepting a MRS. Finally, we do not believe that delegating to 50 States the authority to individually and separately regulate transportation of nuclear materials is consistent with the need for Federal pre-emption. The Federal Government must retain the ability to move these materials for reasons of national security and public safety.

In conclusion, Mr. Chairman, we see no clear-cut value to these four bills and certainly see that some of the features are unnecessary or unwarranted. With the prospects for revisions in over 30 bills, we believe that great care must be taken to assure that net improvement is made to the NWPA if changes are to be made.

Table 1. Existing and Projected Inventories of Spent Nuclear Fuel, By State: Years 1985 and 2000
(In hundreds of units)

State	Spent Nuclear Fuel			
	1985 (MTU)	2000 (MTU)	1985 (m^3)	2000 (m^3)
	(1)	(2)	(3)	(4)
Alabama	9	29	4	11
Arizona	0	10	0	4
Arkansas	3	8	1	3
California	3	16	1	7
Connecticut	7	16	3	7
Florida	7	20	3	8
Georgia	3	15	1	6
Illinois	19	58	8	23
Iowa	1	3	*	1
Kansas	0	3	0	1
Louisiana	0	7	0	3
Maine	3	5	1	2
Maryland	4	9	2	4
Massachusetts	3	6	1	2
Michigan	7	23	3	9
Minnesota	5	11	2	4
Mississippi	0	8	0	3
Missouri	0	3	0	1
Nebraska	3	7	1	3
New Hampshire	0	5	0	2
New Jersey	4	18	2	7
New York	11	29	5	11
North Carolina	5	19	2	7
Ohio	1	10	*	4
Oregon	2	5	1	2
Pennsylvania	8	39	4	15
South Carolina	7	25	3	10
Tennessee	2	16	1	6
Texas	0	13	0	5
Vermont	2	4	1	2
Virginia	6	16	3	6
Washington	*	9	*	4
Wisconsin	5	10	2	4
TOTAL	129	479	55	187

MTU metric ton of uranium.
m^3 cubic meters.
* less than .5.

Source: Pacific Northwest Laboratory, Reactor Spent Fuel Discharge Projections: 1985 to 2020 (PNL-5396), April 1985. The data differ slightly from the data contained in the DOE/RW 0006 report because of different assumptions about on-line availability of nuclear power plants.

Table 2: Existing and Projected National Inventory of High-Level Radioactive Waste by Source, by State: 1985 and 2000
(In thousands of cubic meters)

Source/State	High-Level Radioactive Waste 1985	2000
Defense		
Idaho	10.1	14.2
South Carolina[1]	116.6	67.1
Washington	227.8	248.7
Commercial		
New York[2]	2.3	0.2
TOTAL	356.8	330.2

[1] Decline in volume due to DOE's program to immobilize high-level waste for ultimate geologic disposal.

[2] High-level waste will be converted to a form suitable for geologic disposal.

Source: DOE, Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics (DOE/RW-0006, Rev. 1), December 1985.

Table 3
THE GEOGRAPHIC DISTRIBUTION OF SPENT NUCLEAR FUEL
AND HIGH-LEVEL RADIOACTIVE WASTE

PREPARED TESTIMONY

SUBMITTED BY THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

CONCERNING

TECHNICAL ISSUES IN THE DEPARTMENT OF ENERGY'S

CIVILIAN NUCLEAR WASTE PROGRAM

PRESENTED BY

HUGH L. THOMPSON, JR., DIRECTOR

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SUBMITTED: APRIL 28, 1987

I would like to thank you, Mr. Chairman, for this opportunity to provide the Nuclear Regulatory Commission (NRC) staff views on several matters related to the Department of Energy's (DOE's) civilian high-level radioactive waste program that are of interest to you and other members of the Committee. As requested in your letter of invitation, I will first discuss the NRC staff comments on DOE's final Environmental Assessments (EA's). The NRC's comments on DOE's EA's were also the subject of your March 10, 1987 letter to the Commission and the Commission's April 13, 1987 reply. With your permission, Mr. Chairman, I would like to introduce these letters into the record. I would then like to identify some potential technical and policy issues which the staff is considering in preparing an analysis of Senate Bill 839, the "Nuclear Waste Policy Act Amendments of 1987," for consideration by the Commission.

NRC Staff Comments on DOE's Final Environmental Assessments

NRC staff comments on DOE's five final Environmental Assessments (EA's) for potential repository sites were forwarded to DOE in our letter of December 22, 1986. As noted in the NRC forwarding letter, the NRC staff comments are part of the pre-licensing consultation between the staffs of the DOE and NRC. This pre-licensing consultation is intended to ensure early identification and resolution of potential licensing issues. The intent of our comments on the EA's was to assist the DOE in preparing high-quality Site Characterization Plans (SCP's) for each site. It was not our intent that the final EA's be modified or that the progress of the site investigation program be halted.

The NRC staff review of the EA's was limited to the specific responsibilities of NRC: public health and safety and the waste isolation considerations found in 10 CFR Part 60, NRC regulations for "Disposal of High-Level Radioactive Waste in Geologic Repositories" and related considerations in the DOE Siting Guidelines. In deciding whether to proceed with site characterization at each of the selected sites, DOE has considered other factors outside NRC's regulatory responsibility, such as cost and schedule, and the overall ranking of sites.

Our December 22, 1986 letter to DOE noted that DOE had made significant efforts to respond to each of the NRC staff's major comments on the draft EA's, and had resolved many of these comments. However, in each of the final EA's, the staff review identified some remaining concerns. These remaining concerns involved cases in which DOE had not: (1) identified the range of uncertainties associated with the limited existing data base; (2) identified the range of alternative interpretations and assumptions that can be reasonably supported by existing data; or (3) incorporated a reasonable range of uncertainties and alternative interpretations into evaluations and conclusions.

At this stage of the site investigation and screening process, there is inherent uncertainty in site information that can lead to alternative interpretations of data. Furthermore, resolution of uncertainties -- such as those identified in our comments -- can only be addressed through the site characterization process. Recognition of these uncertainties and alternative interpretations is critical to the development of SCP's that

will lead to adequate characterization of sites and result in the information needed for licensing. To the extent necessary for demonstrating compliance with NRC regulations, site characterization testing should lead to narrowing the range of uncertainties, eliminating alternative interpretations and confirming or revising assumptions on the basis of new data and analyses. This narrowing process will not be effective unless test plans recognize the range of uncertainties and alternative interpretations and assumptions that can be reasonably supported by the existing data.

Our December 22, 1986 letter noted that improvement in the NRC and DOE staff technical interactions was necessary to ensure that NRC staff concerns are being addressed in the development of DOE's site characterization plans. We suggested that two important issues be scheduled for discussion at technical meetings as soon as practicable. I am pleased to report that a meeting on one of these issues was held during the week of April 5 at Hanford, Washington. The subject was hydrologic testing that should be performed before sinking the exploratory shaft at the Hanford site. The meeting included State and Indian tribe representatives as active participants. The manner in which DOE conducted this meeting, both in its thorough treatment of the technical issues and its achievement of an effective dialogue with interested parties, is an example of the improvement we believe is needed to reach consensus on such difficult technical issues. On the basis of the information presented by DOE and discussed at the meeting, NRC staff accepted DOE's proposed approach as a logical step. NRC management is committed to continue

efforts to improve the effectiveness of these technical meetings, including efforts to assure active participation by States and Indian tribes.

I should stress that the NRC staff's comments on the final EA's focused only on those concerns that we believed had not been sufficiently addressed to date in the final EA's. Our comments were not intended to be a catalogue of all our concerns at each site, nor were they intended to limit our ability to address additional concerns as they arise. If we did not mention a concern in our final EA comments, it was because we believed that DOE had adequately recognized in its final EA's the need to resolve that concern, not because we believed that the concern had been resolved and was no longer a potential issue for licensing.

S. 839: "The Nuclear Waste Policy Act Amendments of 1987"

The staff is currently reviewing S.839 in order to provide for the Commission's consideration an analysis of technical and policy issues which may potentially affect NRC regulatory responsibilities. I would like to take this opportunity to present NRC staff views on several of the major considerations raised in our review of S.839.

We recognize that a major policy issued raised in S.839 is the approach of offering a State or Indian tribe a financial incentive to host a repository or Monitored Retrievable Storage Facility (MRS). I would only note that the incentive approach is not unique. For example, both France and Japan have used incentive programs for nuclear power stations, and these programs appear to be successful. The NRC staff's analysis of the bill has focused,

however, on potential impacts on NRC's health, safety, and environmental responsibilities, and our licensing process. I will confine the balance of my remarks to these areas of responsibility.

NRC's fundamental goal is to ensure that any repository site will be chosen on the basis of its ability to isolate waste according to NRC's technical criteria, and that sufficient information will be available to make such judgements. The NRC staff believes it is important that the process of selecting a site: 1) provide opportunity for early identification and resolution of potential licensing issues; 2) provide for detailed site characterization at a sufficient number of sites to afford reasonable assurance that at least one of the sites can be licensed on a schedule in keeping with NWPA objectives; 3) ensure the quality and sufficiency of safety-related information needed for licensing; and 4) provide opportunity for active participation of concerned parties with NRC to allow for timely identification and resolution of potential licensing issues.

The staff is generally concerned that because the bill does not make clear which sections of existing law are to be affected, or how they would be affected, these considerations may not receive adequate attention. Further consideration may be warranted on such matters as participation rights of States and Indian tribes and Congress' role in approving or disapproving a repository. One potential issue is whether States and Indian tribes could, as a practical matter, continue to participate with NRC in identifying potential licensing issues throughout the process, without risk of being found in default of the incentive agreement. Read in conjunction with the

Secretary's prerogative under Section 406(A) to terminate an agreement as a result of conduct by the States and Indian tribes, for example, Section 402(B)(1) appears to call into question a State's or Indian tribe's right to raise these issues without suffering a loss of incentive funds.

In addition to the general concern about the bill's impact on existing law, the staff has identified several more potential issues which warrant further consideration. One of our principal concerns is that, considering the first-of-a-kind nature of this effort, selection of only one site for detailed site characterization runs a risk of resulting in a site which may ultimately prove unlicenseable. If, after suspending characterization of other sites, DOE were to find its initially-chosen site inadequate, or if it could not provide assurance in a licensing proceeding that the site met NRC technical requirements, there could be considerable delay while characterization was completed on another site or slate of sites, with a consequent loss of momentum. The impacts of such a delay on NRC's stated belief that there is reasonable assurance that methods of safe permanent disposal of high level waste would be available when they are needed, would have to be carefully evaluated.

We believe that a sufficient number of sites will have to be characterized in detail at repository depth, to provide reasonable assurance that at least one will be suitable for licensing, on a tight schedule such as that set forth in the Act. As the Commission noted in the Statement of

Considerations accompanying publication of NRC's proposed licensing procedures, this position follows from consideration of both the long-term performance required of and the technical uncertainties involved in the geologic disposal of HLW. (44 FR 70409, Dec. 6, 1979)

Another potential issue is the adequacy of the technical information to be acquired by DOE to support its selection of a site for detailed site characterization. With respect to any new site (other than those for which DOE has done final Environmental Assessments), the staff is concerned that 12 months may not be enough time to investigate the site sufficiently to allow a determination of suitability for characterization. We also believe that such a determination should be preceded by the development of information at least equivalent to that provided in the final EA's and by an opportunity for NRC and other interested parties to comment on any such site. We believe further consideration is warranted to ensure that greater emphasis is placed on identifying and resolving health and safety issues than on the schedule.

Summary

In conclusion, let me summarize the NRC staff's views on the issues before the Committee in this hearing. First, based on our review of the DOE final Environmental Assessments, we believe there is no technical reason why site characterization should not continue. The high-level waste repository is a first-of-a-kind facility, involving complex, unique technical issues which can only be resolved through a detailed site characterization program.

Second, the staff is currently reviewing S.839 in order to provide an analysis to the Commission in their consideration of policy issues which may affect NRC regulatory responsibilities. Based on preliminary staff review, we believe that the bill as drafted may result in premature selection of one site with a possibility of delays in repository development.

PREPARED TESTIMONY

SUBMITTED BY THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

CONCERNING

DEPARTMENT OF ENERGY'S PROGRAM

FOR DISPOSAL OF CIVILIAN HIGH-LEVEL WASTE

PRESENTED BY

ROBERT BERNERO, DEPUTY DIRECTOR

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SUBMITTED: JUNE 29, 1987

Mr. Chairman, members of the Committee, thank you for this opportunity to present the views of the Nuclear Regulatory Commission (NRC) on the Department of Energy's (DOE) program for disposal of civilian high-level waste. I have with me Mr. Robert Browning, Director of NRC's Division of High-Level Waste Management.

As you know, we are in the pre-licensing consultation phase of the repository program. DOE has the responsibility to conduct site characterization activities to acquire data necessary to evaluate the suitability of each candidate site for an application to the Commission for construction authorization. At this stage, DOE's activities include only surface testing. While surface testing can provide a great deal of information about a site and could potentially reveal a condition which could disqualify a site, it cannot provide enough information to determine that a site is suitable for licensing as a repository. Eventually DOE expects to drill an exploratory shaft to perform in situ testing at repository depth. Before sinking such a shaft at any candidate site, DOE must submit to the Commission a plan for site characterization activities for review and comment. This investigation at depth, together with the surface investigation, is expected to provide the necessary data to permit judgments of site suitability for licensing.

In reviewing and commenting on DOE's activities and documents, NRC has raised concerns, which are to be expected in a first-of-a-kind program of this nature. DOE has recognized and responded to NRC concerns, although most can only be settled over time, as part of DOE's site characterization program. This process has permitted us to narrow issues and move toward resolution as

the DOE program focuses on the areas of concern and acquires more data. For example, we have reviewed DOE's draft and final Environmental Assessments for the potential repository sites. We are currently reviewing DOE's Final Mission Plan Amendment. Our effort at this early stage of the program is to identify issues from NRC's regulatory perspective as early as possible and ensure that DOE is addressing those potential licensing issues in an appropriate way. Our next opportunity to consider this question will be in our reviews of the DOE Site Characterization Plans (SCP's), the first of which is scheduled to be issued in the fall of this year. We will also be reviewing DOE's semiannual progress reports as required by the Nuclear Waste Policy Act (NWPA).

I would like to discuss some of our concerns about site characterization at the three sites recommended to and approved by the President for characterization as candidate sites. I will then discuss our comments on DOE's Draft Mission Plan Amendment dated January, 1987 and, more generally, our interaction with DOE. Finally, I would like to describe our quality assurance activities. I will be happy to respond to any questions from the Committee.

Site Characterization Program

NRC staff comments on DOE's final Environmental Assessments (EA's) for potential repository sites were provided to DOE in our letter of December 22, 1986 after review by the Commission. As part of the prelicensing consultation between DOE and NRC, the intent of our comments on the EA's was to assist the DOE

in preparing high quality site characterization plans. As you know, Mr. Chairman, from our previous testimony and correspondence, we noted in this letter to DOE that DOE had made significant efforts to respond to each of the NRC staff's major comments on the draft EA's and had resolved many of these comments. However, in each of the final EA's, the staff review identified some remaining potential licensing issues.

For example, at the Hanford site we feel that the groundwater flow system and the ability to construct a repository in a medium (basalt) with high stresses must be better understood. Additional data and analysis about such characteristics as tectonic stability and the ability of the basalt system to retard movement of radionuclides are needed to determine whether regulatory requirements are met. Additionally, container lifetime estimates for Hanford will require considerably more analysis by DOE.

At the Yucca Mountain site, the major issues include geological concerns such as the presence of potentially active faults and related ground motion, the potential for volcanism, and the origin and significance of mineral veins in the area. Hydrology is also a concern in the saturated and unsaturated zones; groundwater flow patterns and regimes and travel times have yet to be fully determined. As at Hanford, the ability of the medium (tuff) to retard movement of radionuclides is not yet well understood.

At the Deaf Smith site, most of the licensing uncertainty has to do with the characteristics of the salt in which the repository would be located. Salt can dissolve unevenly along faults, leading to undesired flow of water. The

potential for heterogeneities in salt may make construction difficult and retrievability of waste hard to maintain. It may be difficult to seal shafts against inflow of groundwater. Salt can contain brine inclusions which can move in response to temperature or pressure differentials and the corrosive brine could potentially threaten waste packages.

While NRC concerns have been identified for each site, they are not unexpected at this stage of the site investigation and screening process since the existing data base is limited. While these issues should not disqualify the sites from further testing to determine their suitability for the repository, they could have serious implications for the licensability of each site if they are not satisfactorily resolved through information gained from site characterization. Hence, these concerns need to be addressed as the DOE develops and implements a Site Characterization Plan for each site. The purpose of site characterization, as defined by the NWPA and NRC's regulations, is to develop data to evaluate the validity and significance of such concerns relative to site suitability for licensing.

NRC Comments on DOE's Draft Mission Plan Amendment

On April 7, 1987, the Commission sent DOE its comments on the Draft Mission Plan Amendment. In the Draft Amendment, DOE has made significant commitments involving NRC and the States and Tribes, including specifying activities on interactions with NRC on technical issues, implementation of a quality assurance program, and provisions for greater involvement by the States and affected Indian Tribes in the technical program. These are substantially the

same activities which NRC identified to DOE in comments on the Draft Project Decision Schedule on October 24, 1985, as needing to be completed in a timely fashion to permit an efficient licensing review. The NRC staff will cooperate with the DOE in implementing these. To ensure that NRC staff and DOE are progressing satisfactorily in the prelicensing phase, the Commission has also asked DOE to address this topic in future briefings to the Commission. In addition, the Commission has requested NRC staff to provide periodic assessments of progress in the area. The Commission was briefed by DOE and received the staff's assessment in June of 1987. The Commission also was briefed by representatives of potential host states and affected Indian tribes regarding their assessments of progress in this area.

It should also be noted that the Draft Mission Plan Amendment includes language linking the schedule for receipt of spent fuel at the Monitored Retrievable Storage (MRS) facility to the NRC's issuance of a construction authorization for the repository. The NRC letter to DOE emphasized that the basis for the NRC's review of the license application for the repository and the granting of a construction authorization will be public health and safety and will not include consideration related to the MRS schedule for receipt of spent fuel. The proposed linkage between the repository construction authorization and MRS operation, both projected for 1998 under DOE's revised schedule, could lead to at least an appearance of undesirable and unnecessary pressure to issue the repository construction authorization. For this reason and because there is no technical basis for the linkage, the NRC opposes this provision.

NRC/DOE Interaction

The NRC reviews and consultation with DOE take place in the context of the requirements of the NWPA. To facilitate this formal process, NRC and DOE in 1983 entered into a Procedural Agreement which outlines procedures for consultation and exchange of information during investigation and characterization of sites. Under this Procedural Agreement, pre-licensing consultation interactions consist of technical meetings, data and document reviews, and prompt information exchange by an NRC On-Site Licensing Representative (OR) at each DOE project office.

The need to increase the effectiveness of NRC/DOE site-specific technical interactions has been a focus of DOE and NRC management attention for all three DOE projects. Since DOE has been almost continuously occupied with writing the Environmental Assessments (EAs) and SCPs over the past three years -- documents which then consume NRC's time and resources during the comprehensive review required -- it has been difficult to find mutually acceptable times to hold as many technical interactions as would have been desirable. However, both NRC and DOE management have committed to improving the extent and effectiveness of technical interactions, particularly formal technical meetings.

During the first half of 1987, four technical meetings have been held (Hanford Hydrologic Testing, Texas Exploratory Shaft Design, Nevada Exploratory Shaft, Issues Hierarchy and and Performance Allocation). The NRC staff considers

that these meetings succeeded in making progress toward resolving technical issues previously identified by NRC staff.

For example, during the week of April 5 at Hanford, Washington, NRC and DOE staff met to consider hydrologic testing that should be performed before sinking the exploratory shaft at the Hanford site. The meeting included State and Indian tribe representatives as active participants. The manner in which DOE conducted this meeting, both in its thorough treatment of the technical issues and its achievement of an effective dialogue with interested parties, is an example of the improvement we believe is needed to reach consensus on such difficult technical issues. On the basis of the information presented by DOE and discussed at the meeting, NRC staff accepted DOE's proposed approach as a logical step. NRC management is committed to continue efforts to improve the effectiveness of these technical meetings, including efforts to assure active participation by States and Indian tribes.

Due to uncertainties in DOE's schedules, particularly regarding when exploratory shafts will be sunk, NRC staff will be working with DOE to focus near-term technical meetings on specific concerns related to surface-based testing strategies. For example, in our comments on the Draft Mission Plan Amendment, we indicated that some surface-based testing may be needed prior to construction of the shafts because (a) shaft construction may render some testing impossible or useless; and (b) such testing may reveal information about site suitability important to know before major resources are committed for shaft construction. NRC staff considers that significant progress toward

resolution can be made for some areas of technical concern at each site through surface-based testing.

Technical meetings focused on surface-based testing strategies will also allow the staff the opportunity to determine how DOE is incorporating into the SCP's many of the concerns identified in our final EA comments.

Another example of interaction was the briefing of the NRC staff and the affected States and tribes by the DOE on its issues hierarchy and issue resolution strategy. This strategy lays out a logical and rigorous way of identifying issues and the data needed to resolve them. How the DOE implements the issue resolution strategy is the key to whether it is heading in the right direction; NRC staff review of the SCP's will assess progress in this area.

In summary, the NRC/DOE prelicensing consultation has been generally adequate to permit NRC to perform timely reviews of DOE's programmatic documents. As in any major program involving technical and engineering approaches that go well beyond the normal practice, issues which need to be addressed and resolved are being identified. Therefore, NRC and DOE continue to work toward improving communications on these types of issues to ensure they are being addressed as early as practicable. Moreover, NRC recognizes the need to develop additional regulatory guidance to assist DOE in this aspect of its program development. Currently, both NRC and DOE are working to improve our interactions as well as to ensure that States and Indian tribes have

opportunities to participate substantively in these interactions, as consistent with Sections 116, 117 and 118 of the NWPA.

Quality Assurance

One of the key considerations throughout our interaction with DOE, during both the prelicensing phase and the formal licensing process, is quality assurance (QA). DOE has committed to having qualified quality assurance programs in place for site characterization activities that are important to public health and safety and to waste isolation. This commitment is necessary since most of the data collected during the site characterization program is expected to be utilized in the licensing process and must, therefore, be of demonstrable quality.

DOE continues to make progress in developing its QA program. The NRC staff's assessment of DOE's QA program began with observation of certain DOE audits. After DOE determines a part of its program is qualified, NRC staff audits selected critical portions of the programs. This is to ensure that DOE's QA program is checked by DOE to its satisfaction first and then checked on a sample basis by the NRC.

One of the lessons we have learned from our experience with QA at reactors is that it is essential to combine examinations of technical quality with QA reviews. As a result, when we do a QA review, we examine the technical quality of DOE work as well as the procedure and documentation involved. For

this purpose, we send specialists in the relevant technical area with our QA specialists to audit DOE activities.

The NRC staff's first audit of the implementation of this program was conducted the week of June 8, 1987. The area audited was part of the geochemistry program for the Nevada project. The NRC audit team consisted of personnel with expertise in both quality assurance and geochemistry. The NRC audit did find specific problems, particularly in documentation of personnel qualifications. We concluded that the DOE QA program is not fully in place yet and needs some improvement prior to conduct of site characterization work in the area of geochemistry. We are meeting with DOE this week to go over our findings and determine what corrective actions DOE will take in this particular technical area and in its own audit program.

In conclusion, Mr. Chairman, we believe that there is no technical reason relevant to NRC's responsibilities why site characterization should not continue at the three sites approved by the President. The high-level waste repository is a first-of-a-kind facility, involving complex, unique technical issues which can only be resolved through a detailed site characterization program. The effectiveness of the interactions between DOE, NRC, and the potential host states and Indian tribes during the pre-licensing phase to address technical concerns continues to be a matter of high priority for NRC management. This is necessary to permit early resolution of NRC staff technical concerns and thus facilitate an efficient and expeditious licensing review. We are committed to continue our efforts to improve this area whenever practicable.

ADDITIONAL VIEWS OF SENATOR HECHT

I do not think that deep geologic disposal of fresh spent fuel is the best approach for America. I have therefore opposed reporting this legislation to the full Senate.

The twelve amendments which I offered to this measure at markup were designed to both encourage alternatives to deep geologic disposal, and to improve the deep geologic disposal program, because, for the time being at least, that program is the one mandated by law.

Although the Committee accepted all of my amendments in one form or another, I am still troubled by the timing and the basic thrust of this legislation. I do not feel it is appropriate to try to solve this very complex policy problem under the tight schedule and rules that govern the budget reconciliation bill. I do not believe it makes sense to proceed now when the US Court of Appeals in Boston just rejected the Environmental Protection Agency standards that are to be used to determine whether or not a repository site is adequate. Why instruct the Department of Energy to choose a site to characterize when they do not even known what they are supposed to look for, when they don't have any standard to use in evaluating the information they collect?

Finally, I think sequential characterization is a bad idea. Many people fear that if their state is selected as the preferred site, then their state is likely to get railroaded. The track record of the Energy Department over the last few years tends to aggravate these fears.

The legislation and the amendments I have introduced are intended to force DOE and the Congress to more fully examine alternatives to deep geologic disposal of relatively fresh spent fuel. Several of these alternatives would seem to be safer, less expensive, and more scientifically sound.

Some people in Nevada question my active and constructive participation in the markup of this bill. They would have preferred me to act as an obstructionist. Filbustering would certainly have been easier and politically expedient, but, as is very clear from the vote which reported this bill out of Committee, it would have been a losing proposition and accomplished nothing in the long run for the people of my state or the country.

By participating in the Committee's deliberations, by succeeding in attaching my amendments to this legislation even though I oppose it, Nevada and every other state that is being considered for a repository or a monitored retrieveable storage facility, or lies along a transportation route to such a facility, comes out ahead. Even if this particular bill is not enacted into law, the Committee is on record as accepting my amendments.

One of my amendments that was accepted by the Committee calls for a feasibility study of reprocessing spent fuel, particularly

aged spent fuel. There is reason to believe that it is far cheaper to reprocess fuel that has been aged for several decades, than it is to reprocess fresh spent fuel. The combination of recovering unfissioned uranium and plutonium to reuse as fuel, and the reduced cost of reprocessing material that has cooled for several decades, may make reprocessing economically feasible. This approach is especially appealing when one considers that reprocessing could postpone the need for a repository for decades beyond the current schedule, thereby relieving the ratepayers of this otherwise pressing financial burden.

Another amendment accepted by the Committee would require that only packages certified by the Nuclear Regulatory Commission be used in moving waste to a MRS or a repository. The Energy Department has recently made a policy decision in this regard with respect to the repository, but I feel the public needs the guarantee that can only be given by statutory language.

Local governments located along waste transportation corridors need to be trained in how to deal with routine and emergency situations associated with the transportation of waste materials. The training should be provided with federal funds, since federal activities create the need for the training. The Committee accepted an amendment I offered to accomplish this.

The procedures used in the testing of waste packages have not generated a great deal of confidence. The Committee accepted an amendment I offered to make sure that before a package design is licensed by the Nuclear Regulatory Commission, a prototype of that design will have passed actual tests sepcified by the Commission.

Should a site be characterized and eventually chosen for a repository, it is essential that the people of the affected state have firsthand knowledge of the quality of the research and construction work taking place at the location in question. The Committee accepted an amendment I offered that would provide for the necessary on-site oversight through a state-hired representative. Federal funds would pay for this activity.

The Air Force conducts highly sensitive activities in the vicinity of Yucca Mountain, from Nellis Air Force Base. The Nevada Test Site, which includes a portion of Yucca Mountain, is the location of a vitally important weapons testing program, which might easily affect the safety of a nearby repository, or the construction and operation of a repository might affect the security of the weapons testing operations. The Committee accepted an amendment which I offered which would require the Secretary of Energy to consult with the Secretary of Defense and assure the President that the choice of a repository would not jeopardize the national security by interfering with important national defense activities being undertaken near a repository. I would expect that if the Secretary of Energy cannot offer such assurances, then he would necessarily choose another site for a repository.

Subseabed disposal of nuclear waste has been the subject of an international research effort for many years. The federal government made the mistake of not funding our share of this work in fiscal year 1987. I think this was a serious mistake. I offered an amendment to give subseabed disposal research a higher profile in

the Energy Department, and to remove it from that part of the organization that is singlemindedly pursuing deep geologic disposal. While the Committee chose to modify my amendment before accepting it, I am still pleased that the Committee, for the first time, has chosen to formally and explicitly express an interest in this promising alternative to deep geologic disposal. This is clearly a step in the right direction, and I will continue to push for a renewed American involvement in this research.

The Nevada State legislature recently passed a resolution, which was signed by the governor, which presented a list of items for which Nevada would seek compensation from the federal government in the event a repository were located in the state. I offered, and the Committee accepted, an amendment which directs the Secretary of Energy to review and comment on the financial obligations of the United States with regard to the list.

Whichever state ends up with a repository should also receive preferential consideration with regard to siting Energy Department research projects, including, but not limited to, the Superconducting Supercollider. The Committee accepted an amendment which I offered to make sure that the state which gets the repository also gets special consideration for desirable research projects.

I strongly believe that it is unsafe and unwise for this country to transport and dispose of large quantities of fresh spent fuel. From an engineering perspective, from an economic perspective, and, most importantly, from a safety perspective, we should take a hint from other nations and store spent fuel for several decades before considering permanent disposal. While the Committee rejected my amendment to require above-ground storage for fifty years, I am pleased that the Committee accepted the amendment I offered with Senator Evans to require a study of the advantages of such long-term storage. I look forward to resuming the discussion of the value of long-term storage once the required study is completed.

European nations have adopted casks for the transportation and permanent disposal of spent fuel and high level radioactive waste which have been described as superior to those being used, or that are planned to be used, in this country. The Committee accepted my amendment which requires a review of the foreign designs to see if they might be superior. If there are better casks out there, we either ought to use them in this country, or make our own to those standards.

Finally, notification of waste shipments has been a recurring problem for state and local governments. In one instance, the Governor of Nebraska stopped a train carrying waste at the state border, because he did not feel he had received adequate notice of its movement. I believe this is a ridiculous situation, and offered an amendment to make sure that the Energy Department abides by the notice requirements specified by the Nuclear Regulatory Commission.

As a group, I believe these amendments substantially improve a fundamentally flawed program. Unfortunately, I must hold firm to my conclusion that the program is still fundamentally flawed. I therefore oppose this legislation.

CHIC HECHT.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of Rule XXVI of the Standing Rules of the Senate, the Committee notes the following changes in existing law made by the bill as reported (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, and existing law to which no change is proposed is shown in roman):

THE NUCLEAR WASTE POLICY ACT OF 1982

AN ACT To provide for the development for the disposal of high-level radioactive waste and spent nuclear fuel, to establish a program of research, development, and demonstration regarding the disposal of high-level radioactive waste and spent nuclear fuel, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE AND TABLE OF CONTENTS

SECTION 1. This Act may be cited as the "Nuclear Waste Policy Act of 1982".

TABLE OF CONTENTS

Sec. 1. Short title and table of contents.
Sec. 2. Definitions.
Sec. 3. Separability.
Sec. 4. Territories and possessions.
Sec. 5. Ocean disposal.
Sec. 6. Limitation on spending authority.
Sec. 7. Protection of classified national security information.
Sec. 8. Applicability.
Sec. 9. Applicability.
Sec. 10. Reports.

TITLE I—DISPOSAL AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE, SPENT NUCLEAR FUEL, AND LOW-LEVEL RADIOACTIVE WASTE

Sec. 101. State and affected Indian tribe participation in development of proposed repositories for defense waste.

SUBTITLE A—REPOSITORIES FOR DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

Sec. 111. Findings and purposes.
Sec. 112. Recommendation of candidate sites for site characterization.
Sec. 113. Site characterization.
Sec. 114. Site approval and construction authorization.
Sec. 115. Review of repository site selection.
Sec. 116. Participation of States.
Sec. 117. Consultation with States and Indian tribes.
Sec. 118. Participation of Indian tribes.
Sec. 119. Judicial review of agency actions.
Sec. 120. Expedited authorizations.
Sec. 121. Certain standards and criteria.
Sec. 122. Disposal of spent nuclear fuel.
Sec. 123. Title to material.

Sec. 124. Consideration of effect of acquisition of water rights.
Sec. 125. Termination of certain provisions.
Sec. 126. Transportation.
Sec. 127. Consideration in Siting Facilities.

* * * * * * *

TITLE III—OTHER PROVISIONS RELATING TO RADIOACTIVE WASTE

Sec. 301. Mission plan.
Sec. 302. Nuclear Waste Fund.
Sec. 303. Alternate means of financing.
Sec. 304. Office of Civilian Radioactive Waste Management.
Sec. 305. Location of test and evaluation facility.
Sec. 306. Nuclear Regulatory Commission training authorization.

TITLE IV—PROGRAM REDIRECTION

Sec. 401. Findings, Purpose and Definitions.
Sec. 402. First Repository Site Characterization.
Sec. 403. Siting of Monitored Retrievable Storage Facilities.
Sec. 404. Benefits Agreements.
Sec. 405. Content of Agreements.
Sec. 406. Review Panel.
Sec. 407. Siting a Second Repository.
Sec. 408. Termination.
Sec. 409. Miscellaneous Provisions.
Sec. 410. Authorization of Appropriations.

* * * * * * *

APPLICABILITY

SEC. 9. TRANSPORTATION.—Nothing in this Act shall be construed to affect Federal, State, or local laws pertaining to the transportation of spent nuclear fuel or high-level radioactive waste.

REPORTS

SEC. 10. (a)(1) Within sixty days after the date of the enactment of this section, the Secretary shall seek to enter into a contract with the National Academy of Sciences for a study of major facets of reprocessing of spent nuclear fuel, including economics, the impact of reprocessing on the potential for the proliferation of nuclear weapons and effects of reprocessing on nuclear waste management. The study shall include an analysis of years, fifteen years, thirty years, and fifty years, and shall include a sensitivity analysis with respect to the price of uranium and the value of plutonium and uranium recovered in reprocessing. This aspect of the study shall compare the lifecycle cost of a nuclear waste management program involving reprocessing and disposal of vitrified waste with a nuclear waste management program involving direct disposal of spent nuclear fuel.

(2) The Secretary shall submit the report of the National Academy of Sciences under this subsection to Congress by September 30, 1989.

(3) Funds for work performed under this section shall be derived from available appropriations from the Waste Fund.

(b) Within two hundred and seventy days after the date of the enactment of this section, the Secretary shall report to Congress on subseabed disposal of spent nuclear fuel and high-level radioactive waste.

The report under this subsection shall include—

(1) an assessment of the current state of knowledge of subseabed disposal as an alternate technology for disposal of spent nuclear fuel and high-level radioactive waste;

(2) an estimate of the costs of subseabed disposal;

(3) an analysis of institutional factors associated with subseabed disposal, including international aspects of a decision of the United States to proceed with subseabed disposal as an option for nuclear waste management;

(4) a full discussion of the environmental and public health and safety aspects of subseabed disposal;

(5) recommendations on alternative ways to structure an effort in research, development and demonstration with respect to subseabed disposal; and

(6) the recommendations of the Secretary with respect to research, development and demonstration in subseabed disposal of spent nuclear fuel and high-level radioactive waste.

* * * * * * *

SITE APPROVAL AND CONSTRUCTION AUTHORIZATION

SEC. 114. (a) HEARINGS AND PRESIDENTIAL RECOMMENDATION.—(1) The Secretary shall hold public hearings in the vicinity of each site under consideration for recommendation to the President under this paragraph as a site for the development of a repository, for the purposes of informing the residents of the area in which such site is located of such consideration and receiving their comments regarding the possible recommendation of such site. If, upon completion of such hearings and completion of site characterization activities at not less than 3 candidate sites for the first proposed repository, or from all of the characterized sites for the development of subsequent repositories, under section 113, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 113 and this section, including the information described in subparagraph (A) through subparagraph (G)[.] *and in subparagraph (I).* In making site recommendations and approvals subsequent to the first site recommendation, the Secretary and the President, respectively, shall also consider the need for regional distribution of repositories and the need to minimize, to the extent practicable, the impacts and cost of transporting spent fuel and solidified high-level radioactive waste. Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

(A) a description of the proposed repository, including preliminary engineering specifications for the facility;

(B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;

(C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;

(D) a final environmental impact statement prepared pursuant to subsection (f) and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), including an analysis of the consideration given by the Secretary to not less than 3 candidate sites for the first proposed repository or to all of the characterized sites for the development of subsequent repositories, with respect to which site characterization is completed under section 113, together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that any such environmental impact statement concerning the first repository to be developed under this Act shall not be required to consider the need for a repository or the alternatives to geologic disposal;

(E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository;

(F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

(G) such other information as the Secretary considers appropriate; [and]

(H) any impact report submitted under section 116(c)(2)(B) by the State in which such site is located, or under section 118(b)(3)(B) by the affected Indian tribe where such site is located as the case may be[.]; *and*

(I) a statement by the Secretary, after consultation with the Secretary of Defense, with regard to any site recommended under this section, that construction and operation of a repository at such site would not seriously jeopardize the national security by reason of interference with national defense activities, if any, occurring nearby.

* * * * * * *

PARTICIPATION OF STATES

SEC. 116. (a) NOTIFICATION OF STATES AND AFFECTED TRIBES.—The Secretary shall identify the States with one or more potentially acceptable sites for a repository within 90 days after the date of enactment of this Act. Within 90 days of such identification, the Secretary shall notify the Governor, the State legislature, and the tribal council of any affected Indian tribe in any State of the potentially acceptable sites within such State. For the purposes of this title, the term "potentially acceptable site" means any site at which, after geologic studies and field mapping but before detailed

geologic data gathering, the Department undertakes preliminary drilling and geophysical testing for the definition of site location.

(b) STATE PARTICIPATION IN REPOSITORY SITING DECISIONS.—(1) Unless otherwise provided by State law, the Governor or legislature of each State shall have authority to submit a notice of disapproval to the Congress under paragraph (2). In any case in which State law provides for submission of any such notice of disapproval by any other person or entity, any reference in this subtitle to the Governor or legislature of such State shall be considered to refer instead to such other person or entity.

(2) Upon the submission by the President to the Congress of a recommendation of a site for a repository, the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval. Such Governor or legislature may submit such a notice of disapproval to the Congress not later than the 60 days after the date that the President recommends such site to the Congress under section 114. A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate. Such notice of disapproval shall be accompanied by a statement of reasons explaining why such Governor or legislature disapproved the recommended repository site involved.

(3) The authority of the Governor or legislature of each State under this subsection shall not be applicable with respect to any site located on a reservation.

(c) FINANCIAL ASSISTANCE.—(1)(A) The Secretary shall make grants to each State notified under subsection (a) for the purpose of participating in activities required by sections 116 and 117 or authorized by written agreement entered into pursuant to subsection 117(c). Any salary or travel expense that would ordinarily be incurred by such State, or by any political subdivision of such State, may not be considered eligible for funding under this paragraph.

(B) The Secretary shall make grants to each State in which a candidate site for a repository is approved under section 112(c). Such grants may be made to each such State only for purposes of enabling such State—

(i) to review activities taken under this subtitle with respect to such site for purposes of determining any potential economic, social, public health and safety, and environmental impacts of such repository on the State and its residents;

(ii) to develop a request for impact assistance under paragraph (2);

(iii) to engage in any monitoring, testing, or evaluation activities with respect to site characterization programs with regard to such site;

(iv) to provide information to its residents regarding any activities of such State, the Secretary, or the Commission with respect to such site; and

(v) to request information from and make comments and recommendations to, the Secretary regarding any activities taken under this subtitle with respect to such site.

(C) Any salary or travel expense that would ordinarily be incurred by such State, or by any political subdivision of such State, may not be considered eligible for funding under this paragraph.

(2)(A) The Secretary shall provide financial and technical assistance to any State requesting such assistance in which there is a site with respect to which the Commission has authorized construction of a repository. Such assistance shall be designed to mitigate the impact on such State of the development of such repository. Such assistance to such State shall commence within 6 months following the granting by the Commission of a construction authorization for such repository and following the initiation of construction activities at such site.

(B) Any State desiring assistance under this paragraph shall prepare and submit to the Secretary a report on any economic, social, public health and safety, and environmental impacts that are likely as a result of the development of a repository at a site in such State. Such report shall be submitted to the Secretary following the completion of site characterization activities at such site and before the recommendation of such site to the President by the Secretary for application for a construction authorization for a repository. As soon as practicable following the granting of a construction authorization for such repository, the Secretary shall seek to enter into a binding agreement with the State involved setting forth the amount of assistance to be provided to such State under this paragraph and the procedures to be followed in providing such assistance.

(3) The Secretary shall also grant to each State and unit of general local government in which a site for a repository is approved under section 112(c) an amount each fiscal year equal to the amount such State and unit of general local government, respectively, would receive were they authorized to tax site characterization activities at such site, and the development and operation of such repository, as such State and unit of general local government tax the other real property and industrial activities occurring within such State and unit of general local government. Such grants shall continue until such time as all such activities, development, and operation are terminated at such site.

(4)(A) A State may not receive any grant under paragraph (1) after the expiration of the 1-year period following—

(i) the date on which the Secretary notifies the Governor and legislature of the State involved of the termination of site characterization activities at the candidate site involved in such State;

(ii) the date on which the site in such State is disapproved under section 115; or

(iii) the date on which the Commission disapproves an application for a construction authorization for a repository at such site;

whichever occurs first, unless there is another candidate site in the State approved under section 112(c) with respect to which the actions described in clauses (i), (ii), and (iii) have not been taken.

(B) A State may not receive any further assistance under paragraph (2) with respect to a site if repository construction activities

at such site are terminated by the Secretary or if such activities are permanently enjoined by any court.

(C) At the end of the 2-year period beginning on the effective date of any license to receive and possess for a repository in a State, no Federal funds shall be made available to such State under paragraph (1) or (2), except for—

(i) such funds as may be necessary to support State activities related to any other repository located in, or proposed to be located in, such State, and for which a license to receive and possess has not been in effect for more than 1 year; and

(ii) such funds as may be necessary to support State activities pursuant to agreements or contracts for impact assistance entered into, under paragraph (2), by such State with the Secretary during such 2-year period.

(5) Financial assistance authorized in this subsection shall be made out of amounts held in the Nuclear Waste Fund established in section 302.

(d) ADDITIONAL NOTIFICATION AND CONSULTATION.—Whenever the Secretary is required under any provision of this Act to notify or consult with the governing body of an affected Indian tribe where a site is located, the Secretary shall also notify or consult with, as the case may be, the Governor of the State in which such reservation is located.

(e) ADJACENT STATES.—Effective on the date of the enactment of this subsection, a State may exercise the same rights and opportunities to participate in the site selection, review and approval process under this section as the State in which such candidate site selected for characterization for a repository is located if such State—

(1) borders on the State in which such candidate site is located; and

(2) lies contiguous to a river, waterway or aquifer whose flow, as determined by the Secretary of the Interior, passes adjacent to or underneath the site, and continues downstream or down gradient to such bordering State.

* * * * * * *

TERMINATION OF CERTAIN PROVISIONS

SEC. 125. Sections 119 and 120 shall cease to have effect at such time as a repository developed under this subtitle is licensed to receive and possess high-level radioactive waste and spent nuclear fuel.

TRANSPORTATION

SEC. 126. (a) No spent nuclear fuel or high-level radioactive waste may be transported by or for the Secretary under this subtitle or under subtitle C except in packages that have been certified for such purpose by the Commission.

(b) The Secretary shall abide by regulations of the Commission regarding advance notification of state and local governments prior to transportation spent nuclear fuel or high-level radioactive waste under this subtitle or under subtitle C.

(c) The Secretary shall provide technical assistance and funds to states for training for public safety officials of appropriate units of

general local government and Indian tribes through whose jurisdiction the Secretary plans to transport spent nuclear fuel or high-level radioactive waste under this subtitle or under subtitle C. Training shall cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. The Waste Fund shall be the source of funds for work carried out under this subsection.

(d) The Commission shall require actual tests on a sample full-scale package, in addition to any simulated tests, tests on scale models, or engineered analyses as part of the certification process of the Commission for package design for the transportation of spent nuclear fuel or high-level radioactive waste under this subtitle or under subtitle C.

(e) The Commission shall conduct a survey of the packages for transportation or disposal of spent nuclear fuel or high-level radioactive waste used or intended to be used by other nations and report to Congress by January 1, 1989. The report under this subsection shall describe foreign designs and shall comment on the potential for such designs to meet or exceed applicable Commission regulations or standards for such transportation, storage or disposal.

CONSIDERATION IN SITING FACILITIES

SEC. 127. The Secretary, in siting federal research projects, shall give special consideration to proposals from States where a repository is located.

* * * * * * *

NUCLEAR REGULATORY COMMISSION TRAINING AUTHORIZATION

SEC. 306. NUCLEAR REGULATORY COMMISSION TRAINING AUTHORIZATION.—The Nuclear Regulatory Commission is authorized and directed to promulgate regulations, or other appropriate Commission regulatory guidance, for the training and qualifications of civilian nuclear powerplant operators, supervisors, technicians and other appropriate operating personnel. Such regulations or guidance shall establish simulator training requirements for applicants for civilian nuclear powerplant operator licenses and for operator requalification programs; requirements governing NRC administration of requalification examinations; requirements for operating tests at civilian nuclear powerplant simulators, and instructional requirements for civilian nuclear powerplant licensee personnel training programs. Such regulations or other regulatory guidance shall be promulgated by the Commission within the 12-month period following enactment of this Act, and the Commission within the 12-month period following enactment of this Act shall submit a report to Congress setting forth the actions the Commission has taken with respect to fulfilling its obligations under this section.

TITLE IV—PROGRAM REDIRECTION

FINDINGS, PURPOSE AND DEFINITIONS

SEC. 401. FINDINGS.—(a) Congress finds that—

(1) redirection of the program under titles I and II of this Act to provide for the sequential characterization of repository sites

and the construction of monitored retrievable storage facility as part of an integrated nuclear waste management system will result in significant Federal budget savings in fiscal years 1988, 1989, and 1990;

(2) such a redirection is required if the Secretary of Energy is to carry out in a timely fashion his responsibility under this Act to provide for the permanent disposal of spent nuclear fuel and high-level radioactive waste in a manner that protects the public health and safety and the environment; and

(3) it is appropriate that the Federal Government provide payments to Indian tribes, States and affected units of local government within whose reservation or jurisdiction, as the case may be, a repository or monitored retrievable storage facility will be sited under this title.

(b) PURPOSE—It is the purpose of this title to—

(1) direct the Secretary of Energy to select a single site that is suitable for characterization for the first repository and to proceed with characterization of that site;

(2) direct the Secretary to proceed with the construction of a monitored retrievable storage facility as part of an integrated nuclear waste management system; and

(3) provide for benefits payments from the Waste Fund to any Indian tribe, State or unit of local government within whose reservation or jurisdiction, as the case may be, a repository or a monitored retrievable storage facility may be sited under this title.

(c) DEFINITION.—For the purposes of this title the term "affected unit of local government" means the unit of local government with jurisdiction over the site of a repository or a monitored retrievable storage facility. Such term may, at the discretion of the Secretary, include units of local government that are contiguous with such unit.

FIRST REPOSITORY SITE CHARACTERIZATION

SEC. 402. (a)(1) On or before January 1, 1989, the Secretary shall select as the preferred site for the first repository one of the sites previously selected for characterization as candidate sites for the first repository that the Secretary determines on the basis of available information to be the most suitable for characterization as a repository. In selecting the preferred site under this subsection, the Secretary shall give primary consideration to—

(A) prospects for successfully licensing a repository at such site;

(B) potentially disqualifying factors at the site;

(C) potentially adverse impacts on the public health and safety and the environment of locating a repository at such site; and

(D) the estimated cost of characterization, development and operation of repository at such site.

(2) In the period between the date of the enactment of this section and January 1, 1989, the Secretary shall carry out at the sites previously selected for characterization as candidate sites for the first repository such activities as the Secretary determines would provide

information useful in making the selection required under this subsection, including information on potentially disqualifying factors, except that the Secretary shall not initiate construction of an exploratory shaft facility until such time as a preferred site is selected under this subsection.

(b)(1) Effective on the date of selection of a preferred site for the first repository under subsection (a), the Secretary shall take all those actions required or contemplated under this Act to assure that a repository will be constructed and operated at such site at the earliest practicable date.

(2) Effective on such date of selection of a preferred site, the Secretary shall suspend work at other sites selected for characterization as candidate sites for the first repository.

(c) If the Secretary determines that the preferred site for the first repository selected under subsection (a) is not suitable for a repository, the Secretary shall—

(1) immediately notify interested States and Indian tribes and Congress of such determination;

(2) suspend all future benefits payments under this title with respect to such site; and

(3) within six months after such determination select a new site as the preferred site for the first repository from the sites remaining of those considered under subsection (a).

(d) Effective on the date of selection under this section of any site as the preferred site for the first repository, the State in which the site is located shall be eligible to enter into a benefits agreement with the Secretary under section 404.

(e)(1) Any decision by the Secretary under subsection (a), paragraph (b)(2), or subsection (c) shall be in writing, shall be available to Congress and the public, and is not subject to judicial review except as provided in this subsection.

(2) Any action for review of a decision by the Secretary may only be brought within thirty days after public notice of the decision.

(3) The Temporary Emergency Court of Appeals shall have exclusive jurisdiction to review any action brought under this subsection. In reviewing any such action the court shall render its decision within sixty days from the date that the action is filed unless the court determines good cause exists for an extension. In such case the court may extend the time for its decision by not more than thirty days, and such extension may be renewed no more than two times.

(4) In review of any decision under this subsection, the scope of review shall be governed by the provisions of section 706 of title 5 of the United States Code, except that subparagraphs (E) and (F) of paragraph (2) of such section 706 shall not apply.

(5) Any person entitled to judicial review under the provisions of section 702 of title 5 of the United States Code may bring an action under this subsection.

(f)(1) The decision of the Secretary to select a preferred site for a first repository under subsection (a) shall include a detailed statement of the basis for such decision and shall be accompanied by an environmental evaluation, as required herein. The environmental evaluation shall include—

(A) a detailed analysis by the Secretary of the criteria required to be considered under subsection (a);

(B) a comparative evaluation of the preferred site with the other sites previously selected for characterization as candidate sites for the first repository;

(C) a description of the decision process by which the preferred site was selected; and

(D) a summary of, and response to, comments received.

(2) Before preparing the environmental evaluation, the Secretary shall—

(A) solicit the comments of the National Academy of Sciences; and

(B) provide an opportunity for comment by the public.

(3) For a period of two years after the selection of a preferred site under this section the Secretary shall preserve all writings, records of meetings, draft reports and studies, and other documents and recordings prepared by or for employees of the Department of Energy or by or for persons under contract to such Department, relating to the selection of such preferred site and the completion of the environmental evaluation with respect to such selection. Subject to existing law, the Secretary shall make these documents available for inspection by any person requesting to review the documents, at a reasonable time and place. The Secretary shall provide for the photocopying of any such documents at a reasonable fee.

(g) Nothing in this section affects judicial review of actions of the Secretary, the President, or the Commission taken under titles I or III prior to or subsequent to a decision of the Secretary under subsection (a), paragraph (b)(2), or subsection (c).

(h) Within one year after the selection of any site as a preferred site for the first repository under subsection (a), the Secretary shall report to Congress on the potential impacts of locating a repository at such site, including the recommendations of the Secretary for mitigation of such impacts and a statement of which impacts should be dealt with by the Federal Government, which should be dealt with by the State with State resources, including the benefits payments under section 404, and which should be a joint Federal-State responsibility. The report under this subsection shall include the analysis of the Secretary of the authorities available to mitigate these impacts and the appropriate sources of funds for such mitigation. Potential impacts to be addressed in the report under this subsection shall include impacts on—

(1) education, including facilities and personnel for elementary and secondary schools, community colleges, vocational and technical schools and universities;

(2) public health, including the facilities and personnel for treatment and distribution of water, the treatment of sewage, the control of pests and the disposal of solid waste;

(3) law enforcement, including facilities and personnel for the courts, police and sheriff's departments, district attorneys and public defenders and prisons;

(4) fire protection, including personnel, the construction of fire stations and the acquisition of equipment;

(5) medical care, including emergency services and hospitals;

(6) cultural and recreational needs, including facilities and personnel for libraries and museums and the acquisition and expansion of parks;

(7) distribution of public lands to allow for the timely expansion of existing or creation of new communities and the construction of necessary residential and commercial facilities;

(8) vocational training and employment services;

(9) social services, including public assistance programs, vocational and physical rehabilitation programs, mental health services and programs relating to the abuse of alcohol and controlled substances;

(10) transportation, including any roads, terminals, airports, bridges or railways associated with the facility and the repair and maintenance of roads, terminals, airports, bridges or railways damaged as a result of the construction, operation and closure of the facility;

(11) equipment and training for State and local personnel in the management of accidents involving high-level radioactive waste;

(12) availability of energy;

(13) tourism and economic development, including the potential loss of revenue and future economic growth; and

(14) other needs of the State and local governments that would not have arisen but for the characterization of the site and the construction, operation and eventual closure of the facility.

SITING OF MONITORED RETRIEVABLE STORAGE FACILITIES

SEC. 403. (a) The proposal of the Secretary (EC-1022, 100th Congress) to locate a monitored retrievable storage facility at a site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee, with alternative sites on the Oak Ridge Reservation of the Department of Energy and on the former site of a proposed nuclear powerplant in Hartsville, Tennessee, is hereby annulled and revoked. In carrying out the provisions of this section the Secretary shall make no presumption or preference to such sites by reason of their previous selection.

(b) During the period between the date of the enactment of this section and January 1, 1989, the Secretary shall conduct a survey and evaluation of three potentially suitable sites in not less than two States for a monitored retrievable storage facility. In conducting such survey and evaluation, the Secretary shall consider the extent to which siting a monitored retrievable storage facility at each site surveyed would—

(1) enhance the reliability and flexibility of the system for the disposal of spent nuclear fuel and high-level radioactive waste established under this Act;

(2) minimize the impacts of transportation and handling of such fuel and waste;

(3) provide for public confidence in the ability of such system of safely dispose of the fuel and waste;

(4) impose minimal adverse effects on the local community and the local environment;

(5) provide a high probability that the facility will meet applicable environmental, health, and safety requirements in a timely fashion; and

(6) provide such other benefits to the system for the disposal of spent nuclear fuel and high-level radioactive waste as the Secretary deems appropriate.

(c)(1) The Secretary may, on or before January 1, 1989, select as the site for a monitored retrievable storage facility any site that—

(A) the Secretary determines to be suitable for a monitored retrievable storage facility; and

(B)(i) is located in a State where the Governor and the legislature of such State request in writing such selection; or

(ii) is located on the reservation of an Indian tribe where the governing body of such tribe requests in writing such selection.

(2) The Secretary may make grants to any State, Indian tribe or unit of local government to support an assessment of the feasibility of siting a monitored retrievable storage facility under this section at a site under the jurisdiction of such State, tribe, or government.

(3) The Secretary shall make every reasonable effort making use of authority under this title and under other law to encourage requests and to secure a site under this subsection.

(d)(1) If the Secretary selects a site for a monitored retrievable storage facility under subsection (c), the Secretary, consistent with section 141, shall construct and operate such facility as part of an integrated nuclear waste management system and in accordance with applicable agreements under this Act affecting such facility.

(2) If the Secretary does not select a site under subsection (c), the Secretary, not earlier than January 1, 1989, but not later than October 1, 1989, shall select the site evaluated under subsection (b) that the Secretary determines on the basis of available information to be the most suitable for a monitored retrievable storage facility that is an integral part of the system for the disposal of spent nuclear fuel and high-level radioactive waste established under this Act. The Secretary shall promptly notify Congress and the appropriate State or Indian tribe of the selection under this paragraph. Such notification shall be accompanied by a report setting forth the Secretary's reasons for selecting the site.

(e)(1) The selection of a site under subsection (d)(2) shall be effective at the end of the sixty-day period beginning on the date of notification under such subsection, unless the governing body of the Indian tribe on whose reservation such site is located, or, if the site is not on a reservation, the Governor and the legislature of the State in which the site is located, has submitted to Congress a notice of disapproval with respect to such site. If any such notice of disapproval has been submitted under this subsection, the selection of the site under subsection (d)(2) shall not be effective except as provided under subsection 115(c).

(2) For purposes of carrying out the provisions of this subsection, references in section 115(c) to a repository shall be considered to refer to a monitored retrievable storage facility and references to a notice of disapproval of a respository site designation under subsection 116(b) or 118(a) shall be considered to refer to a notice of disapproval under this section.

(3) Once the selection of a site for a monitored retrievable storage facility is effective under this subsection, the Secretary, consistent with section 141, shall construct and operate such facility as part of

an integrated nuclear waste management system and in accordance with applicable agreements under this Act affecting such facility.

(f)(1) The Secretary shall study the need for and feasibility of one or more monitored retrievable storage facilities in addition to the facility authorized in this section. Such study shall examine the desirability of co-locating the site of a monitored retrievable storage facility for spent nuclear fuel from civilian nuclear activities with a site at which substantial volumes of high-level radioactive waste generated from atomic energy defense activities are located. Such study shall also include the development of a plan for the management of such high-level radioactive waste in a system that includes one or more monitored retrievable storage facilities capable of storing both high-level radioactive waste and spent nuclear fuel. The Secretary shall report to Congress by April 1, 1989 on the results of the study under this paragraph.

(2) If the Secretary determines, on the basis of the study under paragraph (1), that one or more additional monitored retrievable storage facilities are in the public interest and are needed to fulfill the responsibilities of the Secretary under this Act, the Secretary shall notify Congress and potentially interested States and Indian tribes of such determination and shall submit to Congress site-specific proposals for the construction of the needed monitored retrievable storage facilities in accordance with the provisions of section 141 of this Act.

(g) Once selection of a site for a monitored retrievable storage facility is made under subsection (c) or is effective under subsection (e) or upon authorization by Congress of one or more sites for monitored retrievable storage facilities under subsection (f), the Indian tribe on whose reservation the site is located, or, in the case that the site is not located on a reservation, the State in which the site is located, shall be eligible to enter into a benefits agreement with the Secretary under section 404.

(h) The provisions of section 116(c) or 118(b) with respect to grants, technical assistance, and other financial assistance shall apply to the State, to affected Indian tribes and to affected units of local government in the case of a monitored retrievable storage facility in the same manner as for a repository.

(i)(1) During the period between the date of the enactment of this subsection and October 1, 1988, the Secretary shall conduct a study and evaluation of the use of dry cask storage technology at the sites of civilian nuclear reactors for the temporary storage of spent nuclear fuel until such time as a permanent geologic repository has been constructed and licensed by the Commission and is capable of receiving spent nuclear fuel. The Secretary shall report to Congress on the study under this paragraph by October 1, 1988.

(2) In conducting the study under paragraph (1) the Secretary shall—

> *(A) consider the costs of dry cask storage technology, the extent to which dry cask storage on the site of civilian nuclear power reactors will affect human health and the environment, the extent to which storage on the sites of civilian nuclear power reactors affects the costs and risks of transportating spent nuclear fuel to a central facility such as a monitored retrievable*

storage facility, and any other factors the Secretary considers appropriate;

(B) consider the extent to which amounts in the Waste Fund can be used, and should be used, to provide funds to construct, operate, maintain, and safeguard spent nuclear fuel in dry cask storage at the sites of civilian nuclear power reactors;

(C) consult with the Commission and include the views of the Commission in the report under paragraph (1); and

(D) solicit the views of State and local governments and the public.

(j)(1) By April 1, 1989, the Secretary shall submit to Congress a report that describes the benefits of storing for at least fifty years spent nuclear fuel compared to the current system design allowing such fuel to age for ten years prior to emplacement in a repository. Such report shall describe—

(A) the changes in design of an integrated nuclear waste management system;

(B) the effect on cost caused by implementing such long-term storage compared to the present system;

(C) the effect of long-term storage on the current schedule of the repository program calling for the acceptance of spent fuel in a repository by 2003;

(D) the increase in repository capacity as a result of reduced thermal load and the possibilities of disposing the spent nuclear fuel likely to be produced in the foreseeable future in a single repository;

(E) the increase in assurance that transportation of aged spent nuclear fuel can be carried out safely; and

(F) the relative impact on public health and safety and the environment.

(2) In developing the report under paragraph (1), the Secretary shall consider the long-term storage and disposal practices for spent nuclear fuel and high-level radioactive waste of other nations that generate such fuel or waste.

(3) The Secretary shall seek public comment on the report under paragraph (1) and shall submit any written comments to Congress as part of the report.

(k) For purposes of this section 'monitored retrievable storage facility' means a facility described in section 141(b)(1).

BENEFITS AGREEMENTS

SEC. 404. (a)(1) The Secretary may enter into a benefits agreement with a State concerning a repository or with a State or an Indian Tribe concerning a monitored retrievable storage facility for the acceptance of high-level radioactive waste or spent nuclear fuel in that State or on the reservation of that tribe, as appropriate. The State or Indian tribe may enter into such an agreement only if the State Attorney General or the appropriate governing authority of the Indian tribe or the Secretary of the Interior in the absense of an appropriate governing authority, as appropriate, certifies to the satisfaction of the Secretary that the laws of the State or Indian tribe provide adequate authority for that entity to enter into the benefits agreement. Any benefits agreements with a State under this section shall be ne-

gotiated in consultation with affected units of local government in such State.

(2) Benefits and payments under this title may be made available only in accordance with a benefits agreement under this section.

(b) A benefits agreement entered into under subsection (a) may be amended only by the mutual consent of the parties to the agreement and terminated only in accordance with section 408.

(c) The Secretary shall offer to enter into a benefits agreement with the Governor of the State containing the preferred site for the first repository. Any benefits agreements with a State under this subsection shall be negotiated in consultation with any affected units of local government in such State.

(d) The Secretary shall offer to enter into a benefits agreement relating to a monitored retriveable storage facility with the governing body of the Indian tribe on whose reservation the site for such facility is located, or, if the site is not located on a reservation, with the Governor of the State in which the site is located and in consultation with affected units of local government in such State.

(e)(1) Only one benefits agreement for a repository under section 402 and only one benefits agreement for a monitored retievalbe storage facility selected under section 403(c) or 403(d) may be in effect at any one time.

(2) If Congress authorizes one or more additional sites for monitored retrievable storage facilities under section 403 (f), then only one benefits agreement for each such additional monitored retrievable storage faciity may be in effect at any one time.

(f) Decisions of the Secretary under this section are not subject to judicial review.

CONTENT OF AGREEMENTS

SEC. 405. (a)(1) In addition to the benefits to which a State, and affected unit of local government or Indian Tribe is entitled under titles I and III, the Secretary shall make payments to such State or Indian tribes that is a party to a benefits agreement under section 404 in accordance with the following schedule:

BENEFITS SCHEDULE

[Amounts in millions of dollars]

Event	*MRS*	*Repository*
Annual payments prior to first spent fuel receipt	*20*	*50*
Upon first spent fuel receipt	*50*	*100*
Annual payments after first spent fuel receipt until closure of the facility	*50*	*100*

For purposes of this subsection, the term—

(A) "MRS" means a monitored retrievable storage facility,

(B) "spent fuel" means high-level radioactive waste or spent nuclear fuel, and

(C) "first spent fuel receipt" does not include receipt of spent fuel or high-level radioactive waste for purposes of testing or operational demonstration.

(2) Annual payments prior to first spent fuel receipt under this section shall be made on the date of execution of the benefits agree-

ment and thereafter on the anniversary date of such execution. Annual payments after first spent fuel receipt until closure of the facility shall be made on the anniversary date of first spent fuel receipt.

(3) If the first spent fuel payment under this section is made within six months after the last annual payment prior to receipt of spent fuel, the first spent fuel payment shall be reduced by an amount equal to one-twelfth of such annual payment for each full month less than six that has not elapsed since the last annual payment.

(4) Notwithstanding paragraphs (1), (2), or (3), no payments under this section may be made before January 1, 1989, and any payment due under this title before January 1, 1989, shall be made on or after such date.

(5) Except as provided in this section, the Secretary may not restrict the purposes for which the payment under this section may be used.

(6) Any State receiving a payment under this section shall transfer not less than one-third portion of such payment to affected units of local government. A plan for this transfer and appropriate allocation of such portion among such governments shall be included in the benefits agreement under section 404 covering such payments. In the event of a dispute concerning such plan, the Secretary shall resolve such dispute, consistent with this Act and applicable State law.

(b) A benefits agreement under section 404 shall provide that—

(1) a Review Panel be established under section 406;

(2) the State or Indian tribe waive its rights under title I to disapprove a recommendation of its site for application for a facility construction authorization;

(3) the parties to the agreement shall share with one another information relevant to the licensing process for the repository or monitored retrievable storage facility, as it becomes available; and

(4) the State or Indian tribe participate in the design of the repository or monitored retrievable storage facility and in the preparation of documents required under law or regulation governing the effects of the facility on the public health and safety.

(c) The Secretary shall make payment to the States or affected Indian tribes under this section from the Waste Fund. The signature of the Secretary on a valid benefits agreement under section 404 shall constitute a commitment by the United States to make payments in accordance with such agreement.

REVIEW PANEL

SEC. 406. (a) The Review Panel required to be established by section 405(b)(1) of this Act shall consist of a Chairman selected by the Secretary in consultation with the Governor of the State or governing body of the Indian tribe, as appropriate, and six other members as follows:

(1) two members selected by the Governor of the State or governing body of the Indian tribe;

(2) two members selected by units of general local government affected by the repository or monitored retrievable storage facility;

(3) one member to represent persons making payments into the Waste Fund, to be selected by the Secretary; and

(4) one member to represent other public interest, to be selected by the Secretary.

(b)(1) The members of the Review Panel shall serve for terms of four years each and, other than full-time employees of the Federal Government, shall receive a per diem compensation for each day spent in meetings or conferences, or other work of the Review Panel, including their necessary travel or other expenses while engaged in the work of the Review Panel.

(2) Expenses of the panel shall be paid by the Secretary from the Waste Fund.

(c) The duties of the Review Panel are to—

(1) advise the Secretary on matters relating to the proposed repository or monitored retrievable storage facility, including issues relating to design, construction, operation, and decommissioning of the facility;

(2) evaluate performance, as it considers appropriate;

(3) recommend corrective actions to the Secretary;

(4) assist in the presentation of State or affected Indian tribe and local perspectives to the Secretary; and

(5) participate in the planning for and the review of preoperational data on environmental, demographic, and socioeconomic conditions of the site and the local community.

(d) The Secretary shall make available promptly any information in the Secretary's possession requested by the Panel or its Chairman.

(e) The requirements of the Federal Advisory Committee Act do not apply to a Review Panel established under this title.

SITING A SECOND REPOSITORY

SEC. 407. (a) While this title is in effect, the Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities.

(b)(1) Notwithstanding section 112(b)(1)(C), the Secretary is not required to nominate sites for a second repository or to recommend to the President sites for a second repository.

(2) Notwithstanding section 114(a)(2), the President is not required to submit to Congress a recommendation of a site for a second repository.

(c) The Secretary shall report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository.

TERMINATION

SEC. 408. (a) The Secretary may terminate a benefits agreement under this title if—

(1) the site under consideration is disqualified for its failure to comply with guidelines and technical requirements established by the Secretary in accordance with this Act; or

(2) the Secretary determines that the Commission cannot license the facility within a reasonable time.

(b) A State or Indian tribe may terminate a benefits agreement under this title only if the Secretary disqualifies the site under consideration for its failure to comply with technical requirements established by the Secretary in accordance with this Act or the Secretary determines that the Commission cannot license the facility within a reasonable time.

(c) Decisions by the Secretary under this section shall be in writing, shall be available to Congress and the public and are not subject to judicial review.

MISCELLANEOUS PROVISIONS

SEC. 409. (a) This title does not affect the provisions of titles I and III of this Act except to establish an alternative procedure for the characterization and development of repositories and the siting of monitored retrievable storage facilities.

(b) The powers and duties of the Secretary under this Act are not affected by this title except as expressly stated in the title.

(c) In implementing the authorities contained in this title, the National Environmental Policy Act of 1969 shall not apply, except as provided in subsection (d).

(d) Notwithstanding subsections (a) and (c), the requirements of title I with respect to the National Environmental Policy Act of 1969 shall apply to a repository or monitored retrievable storage facility covered by a benefits agreement under section 404, except that the provisions of section 114(a)(1)(D) and the provisions of the fourth and fifth sentences of section 114(f) of this Act requiring consideration of 3 sites for purposes of complying with the requirements of the National Environmental Policy Act of 1969 shall not apply.

(e) The Secretary shall offer to any State, Indian tribe or unit of local government within whose jurisdiction a preferred site or a site for a monitored retrievable storage facility is located under this title an opportunity to designate a representative to conduct on-site oversight activities at such site. Reasonable expenses of such representatives shall be paid out of the Waste Fund.

AUTHORIZATION OF APPROPRIATIONS

SEC. 410. There is authorized to be appropriated from the Waste Fund for activities under the Nuclear Waste Policy Act of 1982—

(a) in fiscal year 1988, no more than $567,000,000;

(b) in fiscal year 1989, no more than $545,000,000; and

(c) in fiscal year 1990, no more than $484,000,000.

○